

Drinking Water Surveillance Program

LAKE HURON WATER SUPPLY SYSTEM

Annual Report 1989



**Environment
Environnement**



**LAKE HURON
WATER SUPPLY SYSTEM**

DRINKING WATER SURVEILLANCE PROGRAM

ANNUAL REPORT 1989

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EXECUTIVE SUMMARY
DRINKING WATER SURVEILLANCE PROGRAM
LAKE HURON WATER SUPPLY SYSTEM
1989 ANNUAL REPORT

The Drinking Water Surveillance Program (DWSP) for Ontario is a monitoring program providing immediate, reliable, current information on drinking water quality. The DWSP officially began in April 1986 and is designed to eventually include all municipal supplies in Ontario. In 1989, 65 plants were being monitored.

The Lake Huron Water Supply System is a conventional treatment plant which treats water from Lake Huron. The process consists of coagulation, flocculation, sedimentation, filtration and disinfection. Treated water from this plant is pumped to London where it is fluoridated prior to distribution. This plant has a design capacity of $345.5 \times 1000 \text{ m}^3/\text{day}$ and serves a population of approximately 295,000 people.

Samples of the raw and treated water, the Arva Reservoir and two distribution system sites were taken on a monthly basis. The Lake Huron Water Supply System was sampled for the presence of approximately 180 parameters monthly in 1989. Parameters were divided into the following groups: Bacteriological, Inorganic and Physical (Laboratory Chemistry, Field Chemistry and Metals) and Organic (Chloroaromatics, Chlorophenols, Pesticides and PCB, Phenolics, Polyaromatic Hydrocarbons, Specific Pesticides and Volatiles). Chlorophenols and Specific Pesticides were analyzed in June and November only.

A summary of results is shown in Table A.

Inorganic and Physical parameters were below any applicable health related Ontario Drinking Water Objectives.

Samples were analyzed monthly for the presence of approximately 110 Organics. Levels did not exceed health related guidelines.

During 1989, the DWSP sampling results indicated that the Lake Huron Water Supply System produced good quality water at the plant and this quality was maintained in the distribution system.

TABLE A

DRINKING WATER SURVEILLANCE PROGRAM LONDON (LAKE HURON WSS)

SUMMARY TABLE BY SCAN

SCAN	RAW		TREATED		TREATED 2		SITE 1		SITE 2						
	TESTS	POSITIVE	TESTS	POSITIVE	TESTS	POSITIVE	TESTS	POSITIVE	TESTS	POSITIVE					
BACTERIOLOGICAL	30	19	63	30	2	6	36	0	0	33	3	9	3	1	3
CHEMISTRY (FLD)	36	36	100	71	68	95	66	65	98	71	70	98	9	9	10
CHEMISTRY (LAB)	251	189	75	247	172	69	229	169	73	223	171	76	36	27	7
METALS	288	149	51	288	142	49	265	116	43	265	128	48	47	25	5
CHLOROMONATICS	168	0	0	168	0	0	168	0	0	168	0	0	14	0	0
CHLOROPHENOLS	12	0	0	12	0	0	12	0	0	0	0	0	0	0	0
PAN	176	0	0	176	0	0	158	0	0	0	0	0	0	0	0
PESTICIDES & PCB	408	0	0	408	0	0	408	0	0	343	0	0	34	0	0
PHENOLICS	12	6	50	12	5	41	11	6	54	0	0	0	0	0	0
SPECIFIC PESTICIDES	65	0	0	65	0	0	57	0	0	12	0	0	1	0	0
VOLATILES	348	1	0	319	44	13	348	48	13	348	48	13	29	4	4
TOTAL	1794	400		1796	433		1758	404		1463	420		173	66	

NO KNOWN HEALTH RELATED GUIDELINES WERE EXCEEDED

A POSITIVE VALUE DENOTES THAT THE RESULT IS GREATER THAN THE STATISTICAL LIMIT OF DETECTION AND IS QUANTIFIABLE
 A '0' INDICATES THAT NO SAMPLE WAS TAKEN

DRINKING WATER SURVEILLANCE PROGRAM
LAKE HURON WATER SUPPLY SYSTEM
1989 ANNUAL REPORT

INTRODUCTION

The Drinking Water Surveillance Program (DWSP) for Ontario is a monitoring program providing immediate, reliable, current information on drinking water quality. The DWSP officially began in April 1986 and is designed to eventually include all municipal supplies in Ontario. In 1989, 65 plants were being monitored.

The DWSP was initiated at the Lake Huron Water Supply System, which supplies the City of London, in the summer of 1986. Annual reports were published for 1986 (ISBN 0-7729-2558-5), 1987 and 1988 (ISSN 0840-5271).

This report contains information and results for 1989.

In order to accommodate the increasing number of plants on the DWSP and to facilitate the timely completion of the 1989 annual reports, plants with two or more years of published data will receive an abbreviated annual report. This report maintains the same general format as in previous years but does not include a comprehensive discussion of results. For more detail on the parameters analyzed

and discussion of results, consult the 1987 and 1988 reports.

PLANT DESCRIPTION

The Lake Huron Water Treatment Plant is a conventional treatment plant which treats water from Lake Huron. The process consists of coagulation, flocculation, sedimentation, filtration and disinfection. Treated water from this plant is piped 46.4 kilometres to the Arva Reservoir in London where it is fluoridated prior to distribution. The Lake Huron Water Supply System has a design capacity of $345.5 \times 1000 \text{ m}^3/\text{day}$ and flows for day of sampling ranging from $127.9 \times 1000 \text{ m}^3/\text{day}$ to $254.3 \times 1000 \text{ m}^3/\text{day}$. The supply serves a population of approximately 295,000.

The plant location is shown in Figure 1. Plant process details, in a block schematic, are shown in Figure 2. General plant information is presented in Table 2.

SAMPLING AND ANALYSIS

Plant operating personnel perform analyses on parameters for process control (Table 1).

The Lake Huron Water Supply System was sampled monthly at the plant and the Arva reservoir for the presence of approximately 180 parameters. The distribution site was sampled infrequently.

FIGURE 1

DRINKING WATER SURVEILLANCE PROGRAM

SITE LOCATION MAP

LAKE HURON WATER SUPPLY SYSTEM

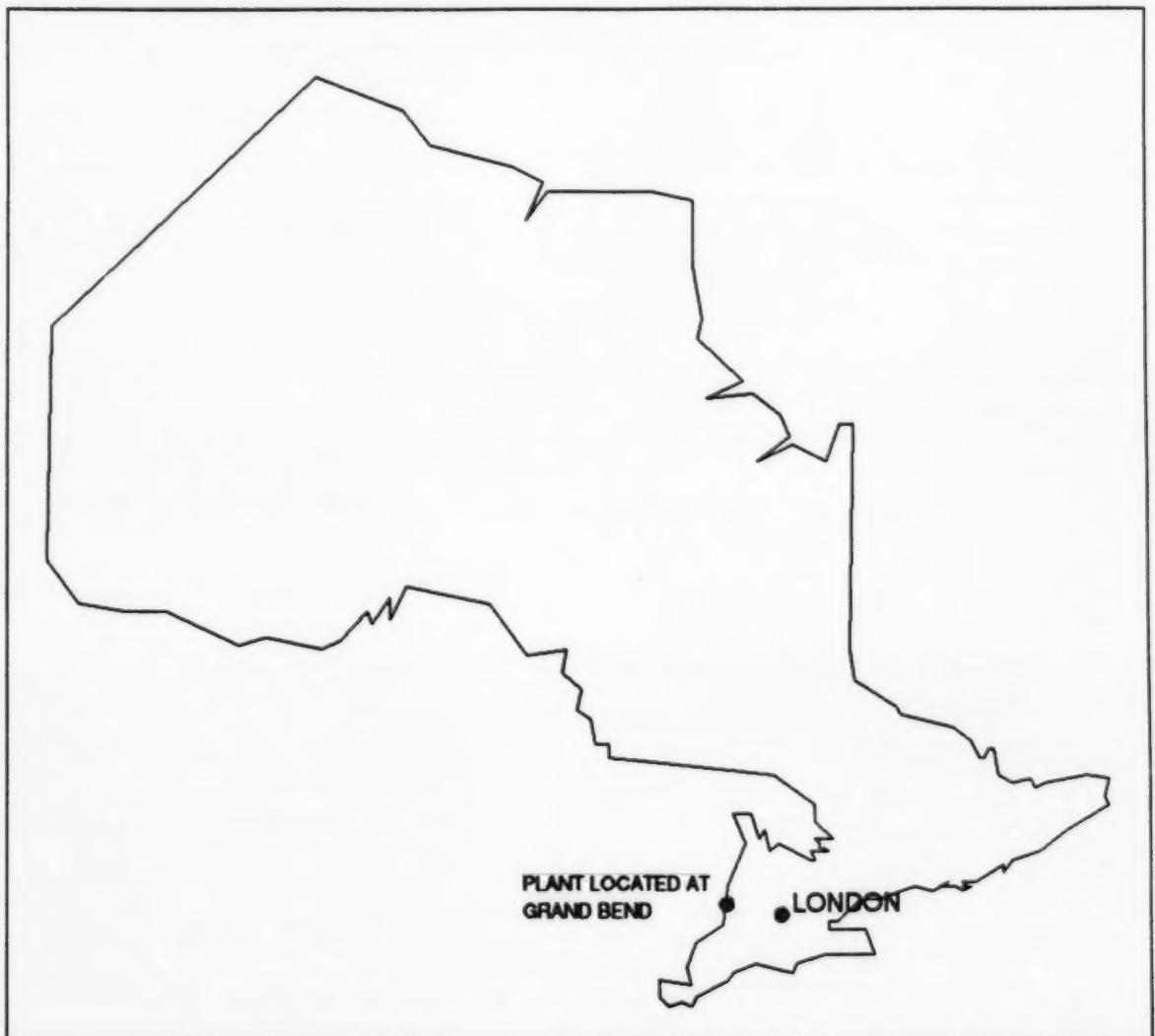


FIGURE 2

LAKE HURON WATER SUPPLY SYSTEM

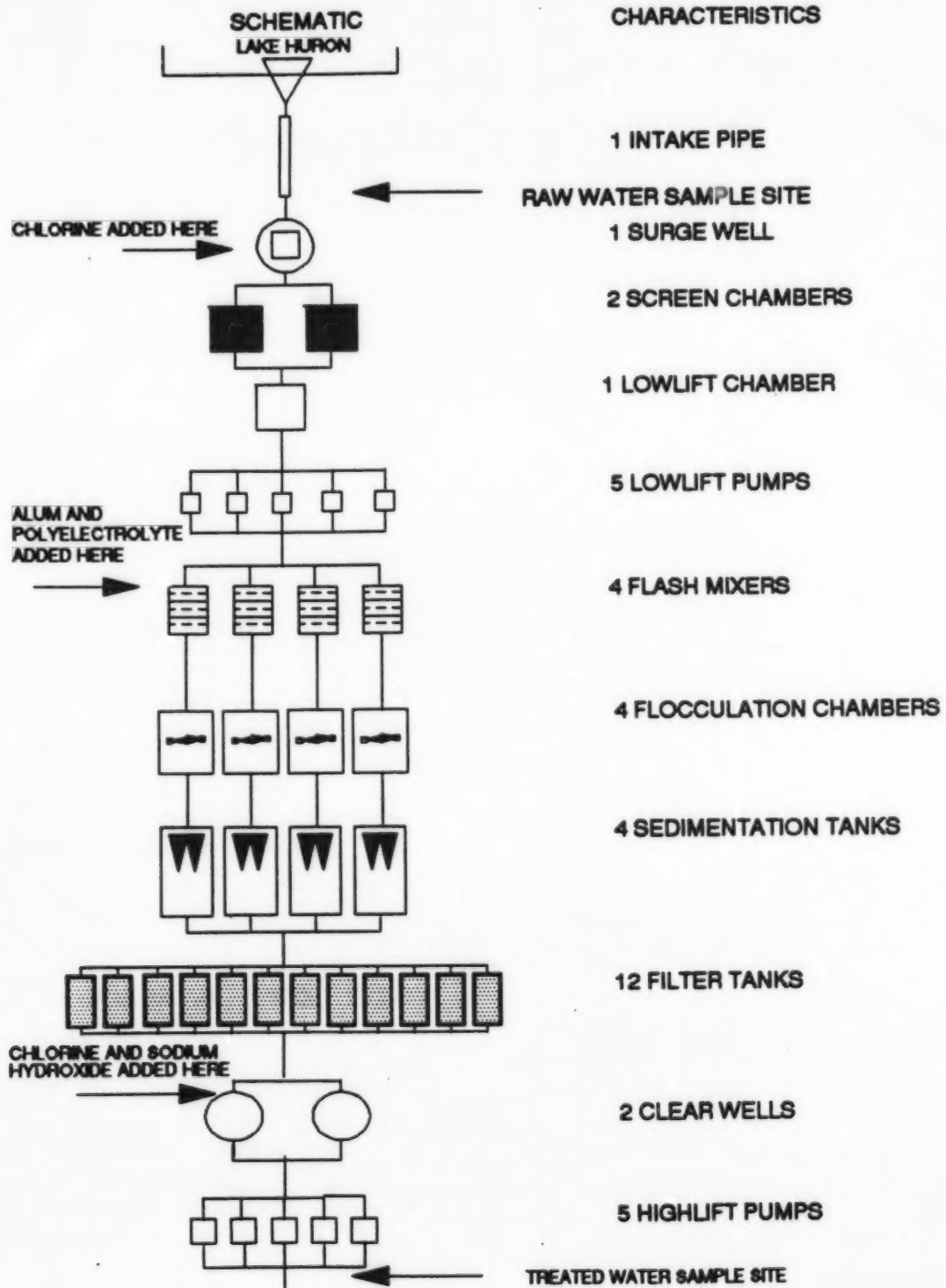


TABLE 1
DRINKING WATER SURVEILLANCE PROGRAM ANNUAL REPORT
IN-PLANT MONITORING LAKE HURON WTP 1989

<u>PARAMETER</u>	<u>LOCATION</u>	<u>FREQUENCY</u>
Algae count	Treated water	weekly
Aluminum residual	Treated water	daily
Chlorine residual-free total	Treated water Treated water	every 4 hrs every 4 hrs
Ph	Raw water Treated water	every 4 hrs every 4 hrs
Temperature	Raw water Treated water	continuous continuous
Turbidity	Raw water Filtered water Treated water	every 4 hrs continuous continuous

TABLE 2

DRINKING WATER SURVEILLANCE PROGRAM

GENERAL INFORMATION

LAKE HURON WATER SUPPLY SYSTEM

<u>LOCATION</u>	P.O. BOX 40 GRAND BEND, ONTARIO NOM 1T0 (519-238-8466)
<u>SOURCE</u>	RAW WATER SOURCE - LAKE HURON
<u>RATED CAPACITY:</u>	345.5 1000 M ³ /DAY
<u>OPERATION:</u>	MINISTRY OF ENVIRONMENT
<u>PLANT SUPERINTENDENT:</u>	A. SCOTT
<u>MINISTRY REGION:</u>	SOUTHWEST
<u>DISTRICT OFFICER:</u>	J. MANUEL

<u>MUNICIPALITY SERVED</u>	<u>POPULATION</u>
CITY OF LONDON	260,000
VILLAGE OF ILBERTON	4,765
VILLAGE OF AILSA CRAIG	831
TOWN OF PARKHILL	1,347
LONDON TOWNSHIP	1,958
M ^c GILLIVRAY TOWNSHIP	1,820
STEPHEN TOWNSHIP	4,204
WEST WILLIAMS TOWNSHIP	952

Samples were analyzed for Specific Pesticides and Chlorophenols in June and November only. Only samples of the raw and treated water at the plant were analyzed for Polyaromatic Hydrocarbons and Phenolics. As of August, analysis of the Triazine pesticides was dropped from the distribution sample. Laboratory analysis was conducted at the Ministry of the Environment facilities in Rexdale, Ontario.

RESULTS

Field chemistry measurements were recorded on the day of sampling and were entered onto the DWSP data base as submitted by plant personnel.

Table 3 contains information on the sample day retention time, flow rate and treatment chemicals used and their associated dosages.

Table 4 is a summary break-down of the number of water samples analyzed by parameter and by water type. The number of times that a positive or trace result was detected is also reported.

Positive denotes that the result is greater than the statistical limit of detection established by the Ministry of the Environment (MOE) laboratory staff and is quantifiable. Trace (<T) denotes that the level measured is greater than the lowest value detectable by the method but lies so close to the detection limit that it

cannot be confidently quantified.

Table 5 presents the results for parameters detected on at least one occasion.

Table 6 lists all parameters analyzed in the DWSP.

Associated guidelines and detection limits are also supplied on tables 5 and 6. Parameters are listed alphabetically within each scan.

DISCUSSION

General

Water quality is judged by comparison with the Ontario Drinking Water Objectives (ODWOs) as defined in the 1984 publication (ISBN 0-7743-8985-0). The Province of Ontario has health related and aesthetic objectives for 49 parameters. These are currently under review. When an ODWO is not available, guidelines/limits from other agencies are consulted. The Parameter Listing System (PALIS), recently published (ISBN 0-7729-4461-X) by the MOE, catalogues and keeps current over 1750 guidelines for 650 parameters from agencies throughout the world.

Many of the compounds detected are naturally occurring or are treatment by-products.

IN THIS REPORT, DISCUSSION IS LIMITED TO THE TREATED AND DISTRIBUTED WATER AND ADDRESSES ONLY THOSE PARAMETERS WITH CONCENTRATIONS ABOVE GUIDELINE VALUES AND ORGANICS WITH DETECTED POSITIVE RESULTS.

Results for the treated and distributed water indicate that no health related guideline was exceeded.

Inorganic and Physical Parameters

Aluminum

The plant operational guideline of 100 µg/L as Al leaving the plant was exceeded seven times in the treated water.

Fluoride

The Laboratory results indicate that fluoride levels were below the ODWO recommended range of 1.0-1.4 mg/L in two treated water samples leaving the Arva reservoir. Fluoride is not added at the treatment plant.

Hardness

The ODWOs indicate that a hardness level of between 80 and 100 mg/L, as calcium carbonate for domestic waters, provides an acceptable balance between corrosion and encrustation. Water

supplies with a hardness greater than 200 mg/L are considered poor and would possess a tendency to form scale deposits and result in excessive soap consumption.

Organic Parameters

Trihalomethanes

Trihalomethanes (THMs) are acknowledged to be produced during the water treatment process and will always occur in chlorinated surface waters. THMs are comprised of Chloroform, Chlorodibromomethane and Dichlorobromomethane. Bromoform occurs occasionally. Results are reported for the individual compounds as well as for total THMs. All Total THM occurrences, ranging from 19.7 to 42.2 $\mu\text{g/L}$, were well below the ODWO of 350 $\mu\text{g/L}$.

CONCLUSIONS

Results listed in this report for 1989 are consistent with results reported for previous years.

No health related water quality guidelines were exceeded.

The treated water was of good quality and this was maintained in the distribution system.

TABLE 3

DRINKING WATER SURVEILLANCE PROGRAM LONDON (LAKE HURON USS) SAMPLE DAY CONDITIONS FOR 1989

SAMPLE DAY CONDITIONS			TREATMENT CHEMICAL DOSAGES (MG/L)						
DATE	DELAY* TIME(HRS)	FLOW (1000G3)	PRE-CHLORINATION	POST-CHLORINATION	COAGULATION	FLUORIDATION			
			CHLORINE	CHLORINE	ALUM LIQUID	POLYALUMINUM CHLORIDE	HYDROFLUOSILICIC ACID		
JAN 16	4.2	142.4	.48	.87	14.00	.	1.04		
FEB 20	4.0	147.8	.45	.84	17.20	.	1.10		
MAR 20	4.2	142.0	.65	.83	16.64	..	1.02		
APR 17	3.2	184.3	.52	.76	20.27	.	1.05		
MAY 25	4.2	141.6	.62	.78	24.31	.	1.10		
JUN 19	4.0	149.2	.47	1.15	19.30	.	1.08		
JUL 17	2.3	254.3	1.59	.92	21.96	.	1.05		
AUG 21	3.4	175.4	1.03	.98	14.20	.	1.03		
SEP 18	4.3	139.0	.43	.57	18.00	.	1.08		
OCT 16	3.7	160.6	1.80	1.70	11.10	.	1.10		
NOV 20	4.7	127.9	.75	.78	7.69	.	1.08		
DEC 18	4.4	135.8	.79	.67	14.30	.	1.08		

* THE DELAY TIME BETWEEN THE RAW AND TREATED WATER SAMPLING, SHOULD ESTIMATE THE RETENTION TIME.

TABLE 4

DRINKING WATER SURVEILLANCE PROGRAM LAKE HURON

SUMMARY TABLE OF RESULTS (1989)

SCAN	PARAMETER	RAW		TREATED		TREATED 2		SITE 1		SITE 2	
		TOTAL	POSITIVE	TRACE	TOTAL	POSITIVE	TRACE	TOTAL	POSITIVE	TRACE	TOTAL
BACTERIOLOGICAL	FECAL COLIFORM MF	10	3	0	.	.	.	.	.	.	.
	STANDARD PLATE CMT MF	.	.	.	10	0	12	0	11	0	1
	TOTAL COLIFORM MF	10	6	0	10	0	12	0	11	2	0
	T COLIFORM BECROD MF	10	10	0	10	0	12	0	11	1	0
*TOTAL SCAM BACTERIOLOGICAL		30	19	0	30	2	0	36	0	0	3
*TOTAL GROUP BACTERIOLOGICAL		30	19	0	30	2	0	36	0	0	3
CHEMISTRY (FLD)	FLD CHLORINE (COMB)	.	.	.	11	8	0	12	11	0	1
	FLD CHLORINE FREE	.	.	.	12	12	0	12	12	0	2
	FLD CHLORINE (TOTAL)	.	.	.	12	12	0	12	12	0	2
	FLD PH	12	12	0	12	12	0	12	12	0	2
	FLD TEMPERATURE	12	12	0	12	12	0	12	12	0	2
	FLD TURBIDITY	12	12	0	12	12	0	6	6	0	12
*TOTAL SCAM CHEMISTRY (FLD)		36	36	0	71	68	0	66	65	0	9
CHEMISTRY (LAB)	ALKALINITY	12	12	0	12	12	0	11	11	0	12
	CALCIUM	12	12	0	12	12	0	11	11	0	12
	CYANIDE	12	0	0	11	0	0	12	0	0	1
	CHLORIDE	12	12	0	12	12	0	11	11	0	12
	COLOUR	12	0	12	12	0	8	11	0	8	12
	CONDUCTIVITY	12	12	0	12	12	0	11	11	0	12

TABLE 4
DRINKING WATER SURVEILLANCE PROGRAM LAKE HURON

SCAM	PARAMETER	SITE	RAW		TREATED		TREATED 2		SITE 1		SITE 2						
			TOTAL POSITIVE TRACE	RAU	TOTAL POSITIVE TRACE	RAU	TOTAL POSITIVE TRACE	RAU	TOTAL POSITIVE TRACE	RAU	TOTAL POSITIVE TRACE	RAU					
CHEMISTRY (LAB)	FLUORIDE	12	11	1	12	0	11	11	0	12	12	0	2	0			
	HARDNESS	12	12	0	12	0	11	11	0	12	12	0	2	0			
	IONCAL	12	12	0	12	0	12	11	0	12	12	0	2	0			
	LANGELIERS INDEX	11	11	0	8	0	7	7	0	7	7	0	2	0			
	MAGNESIUM	12	12	0	12	0	11	11	0	12	12	0	1	0			
	SODIUM	12	12	0	12	0	11	11	0	12	12	0	2	0			
	AMMONIUM TOTAL	12	4	6	12	0	4	11	1	3	12	0	2	0			
	NITRITE	12	3	9	12	0	8	11	1	5	12	0	2	0			
	TOTAL NITRATES	12	12	0	12	0	11	11	0	12	12	0	2	0			
	NITROGEN TOT KJELD	12	12	0	12	11	1	11	9	2	12	11	1	2	0		
	PH	12	12	0	12	0	11	11	0	12	12	0	2	0			
	PHOSPHORUS FIL REACT	12	0	5	12	0	3	11	10	1	-	-	-	-	-		
	PHOSPHORUS TOTAL	12	4	8	12	0	9	11	0	11	-	-	-	-	-		
	SULPHATE	12	12	0	12	12	0	11	11	0	12	12	0	2	0		
	TURBIDITY	12	12	0	12	9	3	11	9	2	12	9	3	2	0		
*TOTAL SCAM CHEMISTRY (LAB)			251	189	41	247	172	36	229	169	32	223	171	24	36	27	3
METALS	SILVER	12	0	1	12	0	4	11	0	3	11	0	4	2	0	1	0
	ALUMINUM	12	12	0	12	12	0	11	11	0	11	11	0	2	0	2	0
	ARSENIC	12	6	6	12	0	11	11	5	6	11	2	9	2	0	2	0
	BARIUM	12	12	0	12	12	0	11	11	0	11	11	0	2	0	2	0
	BORON	12	11	1	12	11	1	11	10	1	11	9	2	2	0	2	0
	BERYLLIUM	12	0	9	12	0	10	11	0	9	11	0	10	2	0	0	0

TABLE 4

DRINKING WATER SURVEILLANCE PROGRAM LAKE MICHIGAN

SUMMARY TABLE OF RESULTS (1989)

SCAN	PARAMETER	SITE			TREATED			TREATED 2			SITE 1			SITE 2		
		TOTAL	POSITIVE	TRACE	TOTAL	POSITIVE	TRACE	TOTAL	POSITIVE	TRACE	TOTAL	POSITIVE	TRACE	TOTAL	POSITIVE	TRACE
METALS	CADMIUM	12	0	2	12	0	3	11	0	3	11	0	1	2	0	1
	COBALT	12	0	12	12	0	12	11	0	11	11	0	11	2	0	2
	CHROMIUM	12	11	0	12	11	0	11	10	1	11	10	0	2	1	1
	COPPER	12	10	2	12	11	1	11	2	9	11	10	1	2	2	0
	IRON	12	3	8	12	0	4	11	0	2	11	0	2	2	0	2
	MERCURY	12	0	4	12	0	4	12	0	5	12	0	5	1	0	1
	MANGANESE	12	12	0	12	8	4	11	0	11	11	3	8	2	0	0
	NICKEL	12	8	4	12	9	3	11	8	3	11	7	4	2	2	0
	NOLYBDEUM	12	0	12	12	6	6	11	1	9	11	0	11	2	0	2
	LEAD	12	11	1	12	3	9	11	0	8	11	10	1	2	2	0
	ANTIMONY	12	11	1	12	11	1	11	11	0	11	10	1	2	2	0
	SELENIUM	12	0	6	12	0	7	11	0	8	11	0	6	2	0	2
	STRONTIUM	12	12	0	12	12	0	11	11	0	11	11	0	2	2	0
	TITANIUM	12	11	1	12	11	1	11	11	0	11	10	1	2	2	0
	THALLIUM	12	0	2	12	0	4	11	0	4	11	0	3	2	0	0
	URANIUM	12	7	5	12	5	7	11	5	6	11	5	6	2	2	0
	VANADIUM	12	0	12	12	8	4	11	9	2	11	9	2	2	2	0
	ZINC	12	12	0	12	12	0	11	11	0	11	10	1	2	2	0
*TOTAL SCAN METALS		268	149	89	268	142	96	265	116	101	265	128	89	47	25	16
*TOTAL GROUP INORGANIC & PHYSICAL		575	374	130	606	382	132	560	350	133	559	369	113	92	61	19
CHLOROMANOMATICS	HEXACHLOROBUTADIENE	12	0	0	12	0	0	12	0	0	12	0	0	1	0	0
	123 TRICHLOROBENZENE	12	0	0	12	0	0	12	0	0	12	0	0	1	0	0

DRINKING WATER SURVEILLANCE PROGRAM LAKE HURON

SCAM	PARAMETER	SITE			TREATED			TREATED 2			SITE 1			SITE 2		
		RAU	TOTAL POSITIVE	TRACE	TOTAL POSITIVE	TRACE	TOTAL POSITIVE	TRACE	TOTAL POSITIVE	TRACE	TOTAL POSITIVE	TRACE	TOTAL POSITIVE	TRACE		
CHLOROAROMATICS	1234 T-CHLOROBENZENE	12	0	0	12	0	0	12	0	0	12	0	0	1	0	0
	1235 T-CHLOROBENZENE	12	0	0	12	0	0	12	0	0	12	0	0	1	0	0
	124 TRICHLOROBENZENE	12	0	0	12	0	0	12	0	0	12	0	0	1	0	0
	1245 T-CHLOROBENZENE	12	0	0	12	0	0	12	0	0	12	0	0	1	0	0
	135 TRICHLOROBENZENE	12	0	0	12	0	0	12	0	0	12	0	0	1	0	0
	HCB	12	0	0	12	0	0	12	0	0	12	0	0	1	0	0
	HEXACHLOROETHANE	12	0	0	12	0	0	12	0	0	12	0	0	1	0	0
	OCTACHLOROSTYRENE	12	0	0	12	0	0	12	0	0	12	0	0	1	0	0
	PENTACHLOROBENZENE	12	0	0	12	0	0	12	0	0	12	0	0	1	0	0
	2346 TRICHLOROTOLUENE	12	0	0	12	0	0	12	0	0	12	0	0	1	0	0
245 TRICHLOROTOLUENE	12	0	0	12	0	0	12	0	0	12	0	0	1	0	0	
26A TRICHLOROTOLUENE	12	0	0	12	0	0	12	0	0	12	0	0	1	0	0	
*TOTAL SCAM CHLOROAROMATICS		168	0	0	168	0	0	168	0	0	168	0	0	14	0	0
CHLOROPHENOLS	234 TRICHLOROPHENOL	2	0	0	2	0	0	2	0	0	2	0	0	0	0	0
	2345 T-CHLOROPHENOL	2	0	0	2	0	0	2	0	0	2	0	0	0	0	0
	2356 T-CHLOROPHENOL	2	0	0	2	0	0	2	0	0	2	0	0	0	0	0
	245-TRICHLOROPHENOL	2	0	0	2	0	0	2	0	0	2	0	0	0	0	0
	246-TRICHLOROPHENOL	2	0	0	2	0	0	2	0	0	2	0	0	0	0	0
	PENTACHLOROPHENOL	2	0	0	2	0	0	2	0	0	2	0	0	0	0	0
	*TOTAL SCAM CHLOROPHENOLS		12	0	0	12	0	0	12	0	0	12	0	0	0	0

TABLE 4

DRINKING WATER SURVEILLANCE PROGRAM LAKE HURON

SUMMARY TABLE OF RESULTS (1989)

SCAM	PARAMETER	SITE		RAW		TREATED		TREATED 2		SITE 1		SITE 2	
		TOTAL	POSITIVE TRACE	TOTAL	POSITIVE TRACE	TOTAL	POSITIVE TRACE	TOTAL	POSITIVE TRACE	TOTAL	POSITIVE TRACE	TOTAL	POSITIVE TRACE
PAN	PHENANTHRENE	11	0	0	11	0	0	0	0	0	0	0	0
	ANTHRACENE	11	0	0	11	0	0	0	0	0	0	0	0
	FLUORANTHRENE	11	0	0	11	0	0	0	0	0	0	0	0
	PYRENE	11	0	0	11	0	0	0	0	0	0	0	0
	BENZO(A)ANTHRACENE	11	0	0	11	0	0	0	0	0	0	0	0
	CHRYSENE	11	0	0	11	0	0	0	0	0	0	0	0
	DIMETH. BENZ(A)ANTHR	4	0	0	4	0	0	3	0	0	0	0	0
	BENZO(E) PYRENE	11	0	0	11	0	0	0	0	0	0	0	0
	BENZO(B) FLUORANTHREN	11	0	0	11	0	0	0	0	0	0	0	0
	PERYLENE	11	0	0	11	0	0	0	0	0	0	0	0
	BENZO(K) FLUORANTHREN	11	0	0	11	0	0	0	0	0	0	0	0
	BENZO(A) PYRENE	7	0	0	7	0	0	5	0	0	0	0	0
	BENZO(G,H,I) PERYLEN	11	0	0	11	0	0	0	0	0	0	0	0
	DIBENZO(A,H) ANTHRAC	11	0	0	11	0	0	0	0	0	0	0	0
	INDENO(1,2,3-C,D) PY	11	0	0	11	0	0	0	0	0	0	0	0
	BENZO(B) CHRYSENE	11	0	0	11	0	0	0	0	0	0	0	0
	CORONENE	11	0	0	11	0	0	0	0	0	0	0	0
*TOTAL SCAM PAN		176	0	0	176	0	0	158	0	0	0	0	0
PESTICIDES & PCB	ALDRIN	12	0	0	12	0	0	12	0	0	0	1	0
	ALPHA BHC	12	0	8	12	0	9	12	0	10	7	1	0
	BETA BHC	12	0	0	12	0	0	12	0	0	1	1	0
	LINDANE	12	0	0	12	0	0	12	0	0	0	1	0

TABLE 4

DRINKING WATER SURVEILLANCE PROGRAM LAKE HURON

SUMMARY TABLE OF RESULTS (1989)

SCAM	PARAMETER	SITE			TREATED			TREATED 2			SITE 1			SITE 2		
		TOTAL	POSITIVE	TRACE	TOTAL	POSITIVE	TRACE	TOTAL	POSITIVE	TRACE	TOTAL	POSITIVE	TRACE	TOTAL	POSITIVE	TRACE
PESTICIDES & PCB	ALPHA CHLORDANE	12	0	0	12	0	0	12	0	0	12	0	0	1	0	0
	GAMMA CHLORDANE	12	0	0	12	0	0	12	0	0	12	0	0	1	0	0
	DIELDRIN	12	0	0	12	0	0	12	0	0	12	0	0	1	0	0
	METHOMYLCHLOR	12	0	0	12	0	0	12	0	0	12	0	0	1	0	0
	ENDOSULFAM I	12	0	0	12	0	0	12	0	0	12	0	0	1	0	0
	ENDOSULFAM II	12	0	0	12	0	0	12	0	0	12	0	0	1	0	0
	ENDRIN	12	0	0	12	0	0	12	0	0	12	0	0	1	0	0
	ENDOSULFAM SULPHATE	12	0	0	12	0	0	12	0	0	12	0	0	1	0	0
	HEPTACHLOR EPOXIDE	12	0	0	12	0	0	12	0	0	12	0	0	1	0	0
	HEPTACHLOR	12	0	0	12	0	0	12	0	0	12	0	0	1	0	0
	MIREX	12	0	0	12	0	0	12	0	0	12	0	0	1	0	0
	OMYCHLORDANE	12	0	0	12	0	0	12	0	0	12	0	0	1	0	0
	OPDUT	12	0	0	12	0	0	12	0	0	12	0	0	1	0	0
	PCB	12	0	0	12	0	0	12	0	0	12	0	0	1	0	0
	DDO	12	0	0	12	0	0	12	0	0	12	0	0	1	0	0
	PPDDE	12	0	0	12	0	0	12	0	0	12	0	0	1	0	0
	PPDPT	12	0	0	12	0	0	12	0	0	12	0	0	1	0	0
	AMETRINE	12	0	0	12	0	0	12	0	0	12	0	0	1	0	0
	ATRAZINE	12	0	0	12	0	0	12	0	0	12	0	0	1	0	0
	ATRAZONE	12	0	0	12	0	0	12	0	0	12	0	0	1	0	0
	CYAMAZINE (BLADEX)	12	0	0	12	0	0	12	0	0	12	0	0	1	0	0
	D-ETHYL ATRAZINE	12	0	0	12	0	0	12	0	0	12	0	0	1	0	0
	D-ETHYL SIMAZINE	12	0	0	12	0	0	12	0	0	12	0	0	1	0	0
	PROXETONE	12	0	0	12	0	0	12	0	0	12	0	0	1	0	0
	PROPALINE	12	0	0	12	0	0	12	0	0	12	0	0	1	0	0

TABLE 4

DRINKING WATER SURVEILLANCE PROGRAM LAKE MIKUM

SUMMARY TABLE OF RESULTS (1989)

SCAN	PARAMETER	SITE		TREATED		TREATED 2		SITE 1		SITE 2	
		TOTAL	RAW	POSITIVE	TRACE	TOTAL	POSITIVE	TOTAL	POSITIVE	TOTAL	POSITIVE
PESTICIDES & PCB	PROMETRYNE	12	0	0	12	0	0	0	0	0	0
	METRIBUZIN (BENCOR)	12	0	0	12	0	0	0	0	0	0
	SIMAZINE	12	0	0	12	0	0	0	0	0	0
	ALACHLOR (LASSO)	12	0	0	12	0	0	0	0	0	0
	METOLACHLOR	12	0	0	12	0	0	0	0	0	0
*TOTAL SCAN PESTICIDES & PCB		408	0	0	408	0	0	0	0	0	0
PHENOLICS	PHENOLICS	12	6	6	12	5	4	11	6	5	5
	PHENOLICS	12	6	6	12	5	4	11	6	5	5
*TOTAL SCAN PHENOLICS		12	6	6	12	5	4	11	6	5	5
SPECIFIC PESTICIDES	TORAPHEME	12	0	0	12	0	0	12	0	0	0
	2,4,5-T	2	0	0	2	0	0	2	0	0	0
	2,4-D	2	0	0	2	0	0	2	0	0	0
	2,4-DB	2	0	0	2	0	0	2	0	0	0
	2,4-D PROPIONIC ACID	2	0	0	2	0	0	2	0	0	0
	DICAMBA	2	0	0	2	0	0	2	0	0	0
	PICHLORAN	0	0	0	0	0	0	0	0	0	0
	SILVEX	2	0	0	2	0	0	2	0	0	0
	DIAZINON	2	0	0	2	0	0	2	0	0	0
	DICHLOROVOS	2	0	0	2	0	0	2	0	0	0
	CHLORPYRIFOS	2	0	0	2	0	0	2	0	0	0
	CHLORPYRIFOS	2	0	0	2	0	0	2	0	0	0

TABLE 4

DRINKING WATER SURVEILLANCE PROGRAM LAKE MICHIGAN

SUMMARY TABLE OF RESULTS (1989)

SCAN	PARAMETER	SITE		TREATED		TREATED 2		SITE 1		SITE 2	
		TOTAL POSITIVE	TRACE	TOTAL POSITIVE	TRACE	TOTAL POSITIVE	TRACE	TOTAL POSITIVE	TRACE	TOTAL POSITIVE	TRACE
SPECIFIC PESTICIDES											
	ETHION	2	0	2	0	2	0	0	0	0	0
	AZINPHOS-METHYL	0	0	0	0	0	0	0	0	0	0
	MALATHION	2	0	2	0	2	0	0	0	0	0
	MEVINPHOS	2	0	2	0	2	0	0	0	0	0
	METHYL PARATHION	2	0	2	0	2	0	0	0	0	0
	METHYLTRITHION	2	0	2	0	2	0	0	0	0	0
	PARATHION	2	0	2	0	2	0	0	0	0	0
	PHORATE	2	0	2	0	2	0	0	0	0	0
	RELDAN	2	0	2	0	2	0	0	0	0	0
	RONNEL	2	0	2	0	2	0	0	0	0	0
	ANTHOCARB	0	0	0	0	0	0	0	0	0	0
	BENOMYL	1	0	1	0	1	0	0	0	0	0
	BUX	0	0	0	0	0	0	0	0	0	0
	CARBOFURAN	2	0	2	0	2	0	0	0	0	0
	CICP	2	0	2	0	2	0	0	0	0	0
	DIALATE	2	0	2	0	2	0	0	0	0	0
	EPTAN	2	0	2	0	2	0	0	0	0	0
	IPC	2	0	2	0	2	0	0	0	0	0
	PROPOXUR	2	0	2	0	2	0	0	0	0	0
	CARBARYL	2	0	2	0	2	0	0	0	0	0
	BUTYLATE	2	0	2	0	2	0	0	0	0	0
*TOTAL SCAN SPECIFIC PESTICIDES		65	0	65	0	57	0	12	0	1	0
VOLATILES											
	BENZENE	12	0	11	0	12	0	12	0	1	0

TABLE 4

DRINKING WATER SURVEILLANCE PROGRAM LAKE MICHIGAN

SUMMARY TABLE OF RESULTS (1969)

SCAM	PARAMETER	SITE		TREATED		TREATED 2		SITE 1		SITE 2					
		TOTAL	RAW	TOTAL	POSITIVE TRACE	TOTAL	POSITIVE TRACE	TOTAL	POSITIVE TRACE	TOTAL	POSITIVE TRACE				
VOLATILES	TOLUENE	12	0	1	11	0	4	12	0	2	12	0	1	0	0
	ETHYLBENZENE	12	0	1	11	0	1	12	0	2	12	0	1	1	0
	P-XYLENE	12	0	0	11	0	0	12	0	0	12	0	0	1	0
	M-XYLENE	12	0	0	11	0	0	12	0	1	12	0	1	1	0
	O-XYLENE	12	0	0	11	0	2	12	0	0	12	0	1	1	0
	STYRENE	12	1	7	11	0	0	12	0	3	12	0	1	1	0
	1,1 DICHLOROETHYLENE	12	0	0	11	0	0	12	0	0	12	0	0	1	0
	METHYLENE CHLORIDE	12	0	0	11	0	0	12	0	0	12	0	0	1	0
	1,1,2,2TETRACHLOROETHYLENE	12	0	0	11	0	0	12	0	0	12	0	1	1	0
	1,1 DICHLOROETHANE	12	0	5	11	11	0	12	0	1	12	0	0	1	0
	CHLOROFORM	12	0	1	11	0	1	12	0	0	12	0	0	1	0
	111, TRICHLOROETHANE	12	0	0	11	0	0	12	0	0	12	0	0	1	0
	1,2 DICHLOROETHANE	12	0	0	11	0	0	12	0	0	12	0	0	1	0
	CARBON TETRACHLORIDE	12	0	0	11	0	0	12	0	0	12	0	0	1	0
	1,2 DICHLOROPROPANE	12	0	0	11	0	0	12	0	0	12	0	0	1	0
	TRICHLOROETHYLENE	12	0	0	11	11	0	12	0	12	0	12	0	1	0
	DICHLOROBROMOMETHANE	12	0	5	11	0	0	12	0	0	12	0	0	1	0
	112 TRICHLOROETHANE	12	0	0	11	11	0	12	0	1	12	0	0	1	0
	CHLORODIBROMOMETHANE	12	0	0	11	0	1	12	0	0	12	0	11	1	0
T-CHLOROETHYLENE	12	0	0	11	0	0	12	0	0	12	0	0	1	0	
BROMOFORM	12	0	0	11	0	11	0	12	0	12	0	0	1	0	
1122 T-CHLOROETHANE	12	0	0	11	0	0	12	0	0	12	0	0	1	0	
CHLOROBENZENE	12	0	0	11	0	0	12	0	0	12	0	0	1	0	
1,4 DICHLOROBENZENE	12	0	0	11	0	0	12	0	0	12	0	0	1	0	
1,3 DICHLOROBENZENE	12	0	0	11	0	0	12	0	0	12	0	0	1	0	

DRINKING WATER SURVEILLANCE PROGRAM LAKE HURON

SUMMARY TABLE OF RESULTS (1989)

[illegible]

KEY TO TABLE 5 and 6

- A** **ONTARIO DRINKING WATER OBJECTIVES (ODWO)**
1. Maximum Acceptable Concentration (MAC)
 - 1+. MAC for Total Trihalomethanes
 - 1*. MAC for Bacteriological Analyses
- Poor water quality is indicated when :
- total coliform counts > 0 < 5
 - P/A Bottle Test is present after 48 hours
 - Aeromonas organisms are detected in more than 25% of samples in a single submission or in successive submissions from the same sampling site
 - Pseudomonas Aeruginosa, Staphylococcus Aureus and members of the Fecal Streptococcus group should not be detected in any sample
 - Standard Plate Count should not exceed 500 organisms per ml at 35 °C within 48 hours
2. Interim Maximum Acceptable Concentration (IMAC)
 3. Maximum Desirable Concentration (MDC)
 4. Aesthetic or Recommended Operational Guideline
- hardness levels between 80 and 100 mg/L as calcium carbonate are considered to provide an acceptable balance between corrosion and incrustation, water supplies with a hardness >200 mg/L are considered poor and those in excess of 500 mg/L are unacceptable.
- B** **HEALTH & WELFARE CANADA (H&W)**
1. Maximum Acceptable Concentration (MAC)
 2. Proposed MAC
 3. Interim MAC
 4. Aesthetic Objective (AO) (for xylenes, the AO is a total)
- C** **WORLD HEALTH ORGANIZATION (WHO)**
1. Guideline Value (GV)
 2. Tentative GV
 3. Aesthetic GV
- D** **US ENVIRONMENTAL PROTECTION AGENCY (EPA)**
1. Maximum Contaminant Level (MCL)
 2. Suggested No-Adverse Effect Level (SNAEL)
 3. Lifetime Health Advisory
 4. EPA Ambient Water Quality Criteria
- F** **EUROPEAN ECONOMIC COMMUNITY (EEC)**
1. Health Related Guideline Level
 2. Aesthetic Guideline Level
 3. Maximum Admissible Concentration (MADC)
- G** **CALIFORNIA STATE DEPARTMENT OF HEALTH-GUIDELINE VALUE**
- H** **USSR MAXIMUM PERMISSIBLE CONCENTRATION**
- I** **NEW YORK STATE AMBIENT WATER GUIDELINE**
- N/A** **NONE AVAILABLE**

INTERPRETATION OF DATA

The interpretation of analytical results that are obtained from measurements near the limit of detection of the measurement process is subject to greater uncertainty than those at higher concentrations. The principle areas of concern relate to whether the substance has actually been detected, whether it has been properly identified, and whether it is an artifact of the measurement process. In other words, false positives can be caused by the instrumentation or the test procedures used, when in fact these compounds are not present in the sample.

There are several methods to treat data from such measurements:

1. Exclude the low-level data because of this uncertainty factor. Studies of long-term environmental trends and modelling may however, be adversely affected by the exclusion of such data.
2. Qualify these data so the user is aware of the greater uncertainty associated with their use.

For the Drinking Water Surveillance Program, measurements near the limit of detection of the measurement process are reported with the code "<T". Results qualified by "W" indicate a zero measurement. These results are reported for purposes of modelling and long-term trend analysis and no significance should be attributed to a single determination of a substance below "T" (a single determination may well be a false positive). Repeat analysis or additional data are needed before it can be stated with certainty that the substance in question was truly present. On the other hand, it is less likely that repeated detection of a substance at or near the limit of detection at a specific location is solely due to an artifact in the measurement system, and more likely represents a true positive. The average of such data however, is still only an estimate of the amount of substance present subject to the possible biases of the method used.

LABORATORY RESULTS, REMARK DESCRIPTIONS

.	No Sample Taken
BDL	Below Minimum Measurable Amount
<T	Greater Than Detection Limit But Not Confident (SEE INTERPRETATION OF RESULTS ABOVE)
>	Results Are Greater Than The Upper Limit
<=>	Approximate Result
!CS	No Data: Contamination Suspected
!IL	No Data: Sample Incorrectly Labelled
!IS	No Data: Insufficient Sample
!IV	No Data: Inverted Septum
!LA	No Data: Laboratory Accident
!LD	No Data: Test Queued After Sample Discarded

!NA	No Data: No Authorization To Perform Reanalysis
!NP	No Data: No Procedure
!NR	No Data: Sample Not Received
!OP	No Data: Obscured Plate
!QU	No Data: Quality Control Unacceptable
!RE	No Data: Received Empty
!RO	No Data: See Attached Report (no numeric results)
!SM	No Data: Sample Missing
!SS	No Data: Send Separate Sample Properly Preserved
!UI	No Data: Indeterminant Interference
!TX	No Data: Time Expired
A3C	Approximate, Total Count Exceeded 300 Colonies
APL	Additional Peak, Large, Not Priority Pollutant
APS	Additional Peak, Less Than, Not Priority Pollutant
CIC	Possible Contamination, Improper Cap
CRO	Calculated Result Only
PPS	Test Performed On Preserved Sample
RMP	P and M-Xylene Not Separated
RRV	Rerun Verification
RVU	Reported Value Unusual
SPS	Several Peaks, Small, Not Priority Pollutant
UAL	Unreliable: Sample Age Exceeds Normal Limit
UCR	Unreliable: Could Not Confirm By Reanalysis
UCS	Unreliable: Contamination Suspected
USD	Unreliable: Sample Decomposition Noted
UIN	Unreliable: Indeterminant Interference
XP	Positive After X Number of Hours
T# (T06)	Result Taken After # Hours

DRINKING WATER SURVEILLANCE PROGRAM LONDON (LAKE HURON VES) 1989

DISTRIBUTION SYSTEM

RAW		TREATED		TREATED 2		SITE 1		SITE 2	
				FREE FLOW		STANDING		FREE FLOW	
BACTERIOLOGICAL									
FECAL COLIFORM MF (CT/100ML)				DET'N LIMIT = 0		GUIDELINE = 0 (A1)			
JAN	1 T48	.	.	.	.	.	.	.	.
MAR	0 T48	.	.	.	.	.	.	.	.
APR	0 T48	.	.	.	.	.	.	.	.
MAY	0	.	.	.	.	.	.	.	.
JUN	0	.	.	.	.	.	.	.	.
JUL	0	.	.	.	.	.	.	.	.
AUG	3	.	.	.	.	.	.	.	.
OCT	0	.	.	.	.	.	.	.	.
NOV	8	.	.	.	.	.	.	.	.
DEC	BDL	.	.	.	.	.	.	.	.
STANDRD PLATE CNT MF ()									
				DET'N LIMIT = 0		GUIDELINE = 500/ML (A1)			
JAN	.	15 T48	0 <=	3 <=	.	.	.	.	.
FEB	.	.	0 <=	.	.	.	.	.	.
MAR	.	0 <=	0 <=	2 <=	.	.	.	.	.
APR	.	2 <=	0 <=	0 <=	.	.	.	.	.
MAY	.	2 <=	0 <=	5 <=	.	.	.	.	.
JUN	.	38	3 <=	0 <=	.	.	.	.	11
JUL	.	0 <=	1 <=	0 <=	.	.	.	.	.
AUG	.	1 <=	0 <=	0 <=	.	.	.	.	.
SEP	.	.	0 <=	0 <=	.	.	.	.	.
OCT	.	2 <=	1 <=	0 <=	.	.	.	.	.
NOV	.	0 <=	0 <=	2 <=	.	.	.	.	.
DEC	.	0 <=	0 <=	1 <=	.	.	.	.	.
TOTAL COLIFORM MF (CT/100ML)									
				DET'N LIMIT = 0		GUIDELINE = 5/100ML (A1)			
JAN	48 T48	0 T48	0 T48	1 T48	.	.	.	.	.
FEB	.	.	0 T24	.	.	.	.	.	.
MAR	20 T48	0 T48	0 T24	.	.	.	.	.	.
APR	BDL	0 T48	0 T24	0 T48	.	.	.	.	.
MAY	BDL	0	0	0 T48	.	.	.	.	.
JUN	2	0	0	0	.	.	.	.	0
JUL	BDL	0	0	1	.	.	.	.	.
AUG	7 A3C	0	0	0	.	.	.	.	.
SEP	.	0	0	0	.	.	.	.	.
OCT	2 A3C	0	0	0	.	.	.	.	.
NOV	340	0	0	0	.	.	.	.	.
DEC	BDL	0	0	0	.	.	.	.	.
T COLIFORM BCKGRD MF (CT/100ML)									
				DET'N LIMIT = 0		GUIDELINE = N/A			
JAN	760 T48	0 T48	0 T48	1 T48	.	.	.	.	.
FEB	.	.	0 T24	.	.	.	.	.	.
MAR	212 T48	0 T48	0 T24	.	.	.	.	.	.
APR	12 T48	0 T48	0 T24	0 T48	.	.	.	.	.
MAY	290	0	0	0 T48	.	.	.	.	0

TABLE 5

DRINKING WATER SURVEILLANCE PROGRAM LONDON (LAKE MURCH WSS) 1989

WATER TREATMENT PLANT

DISTRIBUTION SYSTEM

	RAW	TREATED	TREATED 2	SITE 1 FREE FLOW	SITE 2 STANDING	FREE FLOW
JUN	440	0	0	0	.	.
JUL	4800 >	0	0	0	.	.
AUG	4364 >	0	0	0	.	.
SEP	.	.	0	0	.	.
OCT	4800 >	0	0	0	.	.
NOV	1840	0	0	0	.	.
DEC	8	0	0	0	.	.

TABLE 5

DRINKING WATER SURVEILLANCE PROGRAM LONDON (LAKE HURON WBS) 1989

WATER TREATMENT PLANT

DISTRIBUTION SYSTEM

RAW		TREATED	TREATED 2	SITE 1	SITE 2	
				FREE FLOW	STANDING	FREE FLOW
CHEMISTRY (FLD)						
FLD CHLORINE (COMB) ()			DET'M LIMIT = N/A		GUIDELINE = N/A	
JAN	.	.200	1.000	.200	.	.
FEB	.	.200	.300	.	.	.
MAR	.	.	.100	.100	.	.
APR	.	.050	.100	.100	.	.
MAY	.	.100	.100	.100	.	.100
JUN	.	.150	.100	.100	.	.
JUL	.	.100	.000	.250	.	.
AUG	.	.000	.300	.100	.	.
SEP	.	.200	.300	.200	.	.
OCT	.	.000	.200	.200	.	.
NOV	.	.000	.200	.000	.	.
DEC	.	.050	.100	.050	.	.
FLD CHLORINE FREE ()			DET'M LIMIT = N/A		GUIDELINE = N/A	
JAN	.	1.600	.100	.800	.	.
FEB	.	1.200	.700	1.000	.	.
MAR	.	.800	.900	.900	.	.
APR	.	.900	.900	.800	.	.
MAY	.	1.200	.900	1.000	.300	.400
JUN	.	.800	.900	.900	.	.
JUL	.	1.100	.900	.900	.	.
AUG	.	.900	.700	.800	.	.
SEP	.	1.000	.700	1.000	.	.
OCT	.	.750	.700	.900	.	.
NOV	.	1.000	.900	1.000	.	.
DEC	.	.950	.900	.900	.	.
FLD CHLORINE (TOTAL) ()			DET'M LIMIT = N/A		GUIDELINE = N/A	
JAN	.	1.800	1.100	1.000	.	.
FEB	.	1.400	1.000	1.000	.	.
MAR	.	.800	1.000	1.000	.	.
APR	.	.950	1.000	.900	.	.
MAY	.	1.300	1.000	1.100	.300	.500
JUN	.	.950	1.000	1.000	.	.
JUL	.	1.200	.900	1.150	.	.
AUG	.	.900	1.000	.900	.	.
SEP	.	1.200	1.000	1.200	.	.
OCT	.	.750	.900	1.100	.	.
NOV	.	1.000	1.100	1.000	.	.
DEC	.	1.000	1.000	.950	.	.
FLD PH (DMWSLESS)			DET'M LIMIT = N/A		GUIDELINE = 6.5-8.5(A4)	
JAN	7.300	7.400	7.200	7.200	.	.
FEB	7.400	7.500	7.200	7.500	.	.
MAR	7.700	7.500	7.200	7.300	.	.

TABLE 5

DRINKING WATER SURVEILLANCE PROGRAM LONDON (LAKE MURCH WBS) 1989

WATER TREATMENT PLANT

DISTRIBUTION SYSTEM

	RAW	TREATED	TREATED 2	SITE 1		SITE 2	
				FREE FLOW	STANDING	FREE FLOW	
APR	7.500	7.300	7.200	7.400	.	.	.
MAY	7.300	7.500	7.300	7.400	7.400	7.400	.
JUN	7.800	7.500	7.200	7.500	.	.	.
JUL	7.900	7.500	7.200	7.400	.	.	.
AUG	7.500	7.500	7.200	7.300	.	.	.
SEP	7.500	7.500	7.200	7.500	.	.	.
OCT	7.800	7.500	7.300	7.500	.	.	.
NOV	7.500	7.500	7.200	7.500	.	.	.
DEC	7.100	7.500	7.100	7.300	.	.	.
FLD TEMPERATURE (DEG.C)				DET'N LIMIT = N/A		GUIDELINE = 15 (A1)	
JAN	5.000	9.400	1.000	6.000	.	.	.
FEB	3.000	4.000	4.000	7.000	.	.	.
MAR	2.200	4.000	3.000	5.000	.	.	.
APR	5.000	6.000	5.500	7.500	.	.	.
MAY	10.000	9.000	10.500	9.500	14.000	12.000	.
JUN	15.000	15.000	12.000	14.000	.	.	.
JUL	14.000	17.200	18.000	15.000	.	.	.
AUG	22.000	23.000	23.000	12.000	.	.	.
SEP	11.800	13.500	14.000	15.000	.	.	.
OCT	14.000	15.000	14.200	14.000	.	.	.
NOV	6.000	8.000	9.100	11.000	.	.	.
DEC	3.000	3.000	4.500	9.000	.	.	.
FLD TURBIDITY (FTU)				DET'N LIMIT = N/A		GUIDELINE = 1.0 (A1)	
JAN	3.600	.100	.	.110	.	.	.
FEB	1.400	.230	1.000	.190	.	.	.
MAR	1.400	.200	.	.260	.	.	.
APR	.900	.360	1.000	.190	.	.	.
MAY	3.200	.170	.950	.130	.	.	.
JUN	1.000	.150	.	.280	.	.	.
JUL	1.200	.190	.	.190	.	.	.
AUG	.940	.170	1.000	.170	.	.	.
SEP	1.500	.170	1.000	.170	.	.	.
OCT	.900	.190	1.000	.250	.	.	.
NOV	9.800	.120	.	.190	.	.	.
DEC	12.100	.120	.	.120	.	.	.

TABLE 5

DRINKING WATER SURVEILLANCE PROGRAM LONDON (LAKE MICHIGAN) 1989

WATER TREATMENT PLANT				DISTRIBUTION SYSTEM		
RAW	TREATED	TREATED 2	SITE 1	SITE 2		
			FREE FLOW	STANDING	FREE FLOW	
CHEMISTRY (LAB)						
ALKALINITY (MG/L)		DET'N LIMIT = .200		GUIDELINE = 30-500 (A4)		
JAN	88.300	80.100	78.500	80.200	.	.
FEB	89.200	79.400	78.200	84.000	.	.
MAR	87.300	81.400	77.800	80.000	.	.
APR	82.800	72.600	72.200	76.600	.	.
MAY	86.300	78.600	76.200	76.300	85.200	81.300
JUN	86.900	83.000	78.600	79.500	.	.
JUL	87.800	79.000	76.500	78.500	.	.
AUG	86.000	79.000	77.000	79.300	.	.
SEP	84.600	77.500	78.700	76.400	.	.
OCT	86.300	81.300	77.800	79.500	.	.
NOV	85.000	78.700	76.000	77.700	.	.
DEC	85.900	80.200	ISM	78.900	.	.
CALCIUM (MG/L)		DET'N LIMIT = .100		GUIDELINE = 100 (F2)		
JAN	28.400	28.400	27.800	29.000	.	.
FEB	30.800	31.200	31.600	31.800	.	.
MAR	30.800	31.200	31.000	31.200	.	.
APR	27.800	28.400	28.000	27.600	.	.
MAY	29.800	29.600	30.200	29.400	32.600	31.400
JUN	30.000	29.800	30.400	30.000	.	.
JUL	29.600	29.000	29.800	30.000	.	.
AUG	29.600	29.800	29.800	30.200	.	.
SEP	29.000	29.800	29.000	28.800	.	.
OCT	29.400	29.200	29.000	29.600	.	.
NOV	29.000	28.600	28.800	28.000	.	.
DEC	30.100	29.800	ISM	29.400	.	.
CHLORIDE (MG/L)		DET'N LIMIT = .200		GUIDELINE = 250 (A3)		
JAN	6.300	7.700	7.200	7.200	.	.
FEB	6.400	7.600	7.500	7.600	.	.
MAR	6.300	7.100	7.000	7.400	.	.
APR	5.900	6.400	7.100	6.800	.	.
MAY	6.500	7.200	7.400	7.500	BDL	BDL
JUN	6.300	7.300	7.800	7.800	.	.
JUL	6.200	6.200	6.300	6.600	.	.
AUG	6.100	7.100	7.500	7.500	.	.
SEP	5.700	6.900	7.200	7.100	.	.
OCT	6.000	6.600	7.100	7.100	.	.
NOV	6.100	6.800	6.900	6.900	.	.
DEC	6.300	7.000	ISM	7.100	.	.
COLOUR (NZU)		DET'N LIMIT = .5		GUIDELINE = 5.0 (A3)		
JAN	1.000 <T	BDL	BDL	.500 <T	.	.
FEB	1.500 <T	.500 <T	.500 <T	1.000 <T	.	.
MAR	1.500 <T	.500 <T	.500 <T	.500 <T	.	.

TABLE 5

DRINKING WATER SURVEILLANCE PROGRAM LONDON (LAKE MURCH WSS) 1989

WATER TREATMENT PLANT

DISTRIBUTION SYSTEM

	RAW	TREATED	TREATED 2	SITE 1		SITE 2	
				FREE FLOW	STANDING	FREE FLOW	
APR	1.000 <T	BDL	BDL	BDL	.500 <T	BDL	
MAY	1.000 <T	.500 <T	.500 <T	.500 <T	.	.	
JUN	1.000 <T	BDL	.500 <T	.500 <T	.	.	
JUL	1.500 <T	.500 <T	.500 <T	BDL	.	.	
AUG	.500 <T	BDL	.500 <T	BDL	.	.	
SEP	1.000 <T	.500 <T	BDL	.500 <T	.	.	
OCT	.500 <T	.500 <T	.500 <T	.500 <T	.	.	
NOV	.500 <T	.500 <T	.500 <T	.500 <T	.	.	
DEC	.500 <T	.500 <T	18H	.500 <T	.	.	
CONDUCTIVITY (UMHO/CM)				DET'N LIMIT = 1	GUIDELINE = 400 (F2)		
JAN	219	225	225	224	.	.	
FEB	230	236	237	237	.	.	
MAR	230	233	235	232	.	.	
APR	217	221	225	225	255	246	
MAY	223	227	229	229	.	.	
JUN	227	229	231	231	.	.	
JUL	221	225	226	226	.	.	
AUG	219	223	226	225	.	.	
SEP	220	224	223	220	.	.	
OCT	221	223	225	223	.	.	
NOV	217	222	222	219	.	.	
DEC	221	224	18H	225	.	.	
FLUORIDE (MG/L)				DET'N LIMIT = .01	GUIDELINE = 2.400 (A1)		
JAN	.080	.060	1.020	.060	.	.	
FEB	.080	.060	.900	.080	.	.	
MAR	.080	.080	1.020	.080	.	.	
APR	.080	.060	.960	.060	1.020	1.060	
MAY	.100	.120	1.100	.100	.	.	
JUN	.060	.060	1.040	.060	.	.	
JUL	.100	.100 RRV	1.060 RRV	.100 RRV	.	.	
AUG	.080	.080	1.080	.080	.	.	
SEP	.080	.080	1.040	.060	.	.	
OCT	.040 <T	.080	1.080	.080	.	.	
NOV	.080	.080	1.100	.080	.	.	
DEC	.100	.080	18H	.060	.	.	
HARDNESS (MG/L)				DET'N LIMIT = .500	GUIDELINE = 80-100 (A4)		
JAN	102.000	102.000	100.000	103.000	.	.	
FEB	110.000	111.000	112.000	113.000	.	.	
MAR	111.000	111.000	111.000	111.000	.	.	
APR	102.000	104.000	103.000	103.000	115.000	110.000	
MAY	107.000	106.000	107.000	105.000	.	.	
JUN	106.000	106.000	108.000	107.000	.	.	
JUL	107.000	105.000	107.000	107.000	.	.	
AUG	105.000	106.000	106.000	107.000	.	.	

TABLE 5

DRINKING WATER SURVEILLANCE PROGRAM LONDON (LAKE MURON USS) 1989

WATER TREATMENT PLANT				DISTRIBUTION SYSTEM		
	RAW	TREATED	TREATED 2	SITE 1	SITE 2	
					FREE FLOW	FREE FLOW
SEP	103.000	105.000	103.000	103.000	.	.
OCT	105.000	104.000	104.000	105.000	.	.
NOV	103.000	103.000	103.000	101.000	.	.
DEC	105.600	105.100	188	103.500	.	.
IONCAL (DNMSLESS)				DET'N LIMIT = N/A	GUIDELINE = N/A	
JAN	4.343	3.351	2.706	1.067	.	.
FEB	.161	.783	4.840	1.162	.	.
MAR	3.951	3.567	5.255	4.335	.	.
APR	1.841	4.049	3.088	.565	.	.
MAY	.971	.104	3.969	.203	8.448	7.948
JUN	12.240	1.901	1.820	.194	.	.
JUL	.668	.300	4.213	2.647	.	.
AUG	.150	.490	.677	.031	.	.
SEP	1.006	2.144	.902	1.132	.	.
OCT	.969	1.038	1.643	1.244	.	.
NOV	1.301	2.488	.202	3.073	.	.
DEC	.766	.152	.000 NAF	1.635	.	.
LANGELIERS INDEX (DNMSLESS)				DET'N LIMIT = N/A	GUIDELINE = N/A	
JAN	-.148	-.343	-.291	-.163	.	.
FEB	.177	-.170	-.141	-.098	.	.
MAR	.348	.252	.219	.235	.	.
APR	.115	-.214	-.214	-.115	.	.
MAY	.321	.226	.231	.120	-.068	.009
JUN	.076	-.058	-.084	-.075	.	.
JUL	.337	.140	.108	.112	.	.
AUG	.278	.143	.071	.119	.	.
SEP	.172	.014	.029	.065	.	.
OCT	.336	.186	.064	.113	.	.
NOV	.295	.074	.102	-.010	.	.
DEC	.244	.229	.	.086	.	.
MAGNESIUM (MG/L)				DET'N LIMIT = .050	GUIDELINE = 30 (F2)	
JAN	7.500	7.500	7.500	7.600	.	.
FEB	8.000	8.000	8.100	8.000	.	.
MAR	8.300	8.000	8.000	8.100	.	.
APR	8.100	8.100	8.100	8.200	.	.
MAY	7.800	7.700	7.800	7.700	8.000	7.700
JUN	7.700	7.800	7.900	7.800	.	.
JUL	8.000	7.900	8.000	7.900	.	.
AUG	7.500	7.700	7.600	7.600	.	.
SEP	7.500	7.400	7.500	7.500	.	.
OCT	7.700	7.400	7.600	7.500	.	.
NOV	7.500	7.700	7.500	7.600	.	.
DEC	7.400	7.500	188	7.350	.	.

TABLE 5

DRINKING WATER SURVEILLANCE PROGRAM LONDON (LAKE MICHIGAN WSS) 1989

WATER TREATMENT PLANT

DISTRIBUTION SYSTEM

	RAW	TREATED	TREATED 2	SITE 1	SITE 2	
					FREE FLOW	FREE FLOW
					STANDING	
SODIUM (MG/L)			DET'N LIMIT = .200		GUIDELINE = 200 (C3)	
JAN	3.600	3.800	3.800	3.800	.	.
FEB	3.800	4.000	3.400	4.200	.	.
MAR	3.800	3.600	3.600	3.600	.	.
APR	3.600	3.600	3.600	3.600	.	.
MAY	3.800	3.600	3.800	3.800	4.400	4.000
JUN	3.800	3.600	3.600	3.800	.	.
JUL	3.600	3.600	3.400	3.600	.	.
AUG	3.600	3.600	3.600	3.600	.	.
SEP	3.600	3.800	3.800	3.800	.	.
OCT	3.800	3.800	3.800	3.800	.	.
NOV	3.800	3.800	3.800	3.600	.	.
DEC	3.800	3.400	ISM	3.600	.	.
AMMONIUM TOTAL (MG/L)			DET'N LIMIT = 0.002		GUIDELINE = .05 (F2)	
JAN	.008 <T	.004 <T	.006 <T	.008 <T	.	.
FEB	.012	.002 <T	BDL	.006 <T	.	.
MAR	BDL	BDL	.006 <T	BDL	.	.
APR	.002 <T	BDL	BDL	BDL	.	.
MAY	.008 <T	.002 <T	BDL	.006 <T	BDL	BDL
JUN	.010	BDL	BDL	BDL	.	.
JUL	.002 <T	BDL	BDL	BDL	.	.
AUG	.014	.002 <T	.002 <T	.002 <T	.	.
SEP	.010	BDL	.012	BDL	.	.
OCT	.006 <T	BDL	BDL	BDL	.	.
NOV	BDL	BDL	BDL	BDL	.	.
DEC	.002 <T	BDL	ISM	BDL	.	.
NITRITE (MG/L)			DET'N LIMIT = 0.001		GUIDELINE = 1.000 (A1)	
JAN	.002 <T	BDL	BDL	BDL	.	.
FEB	.003 <T	.001 <T	BDL	.001 <T	.	.
MAR	.004 <T	.002 <T	.005	.003 <T	.	.
APR	.004 <T	.001 <T	.001 <T	.001 <T	.	.
MAY	.003 <T	BDL	BDL	BDL	.002 <T	.002 <T
JUN	.008	.004 <T	.002 <T	.003 <T	.	.
JUL	.004 <T	.001 <T	.001 <T	.001 <T	.	.
AUG	.007	.003 <T	.004 <T	.004 <T	.	.
SEP	.002 <T	BDL	.001 <T	BDL	.	.
OCT	.005	.002 <T	BDL	.001 <T	.	.
NOV	.003 <T	BDL	BDL	BDL	.	.
DEC	.002 <T	.001 <T	ISM	BDL	.	.
TOTAL NITRATES (MG/L)			DET'N LIMIT = .020		GUIDELINE = 10.000 (A1)	
JAN	.310	.315	.320	.310	.	.
FEB	.515	.520	.525	.585	.	.
MAR	.415	.415	.410	.400	.	.
APR	.455	.335	.390	.405	.	.

TABLE 5

DRINKING WATER SURVEILLANCE PROGRAM LONDON (LAKE MURCH WBS) 1989

WATER TREATMENT PLANT

DISTRIBUTION SYSTEM

	RAW	TREATED	TREATED 2	SITE 1		SITE 2	
				FREE FLOW	STANDING	FREE FLOW	
MAY	.380	.375	.395	.380	.600	.525	
JUN	.390	.360	.450	.435	.	.	
JUL	.315	.315	.325	.330	.	.	
AUG	.250	.250	.230	.240	.	.	
SEP	.320	.325	.265	.290	.	.	
OCT	.280	.275	.275	.275	.	.	
NOV	.285	.285	.295	.285	.	.	
DEC	.295	.300	ISM	.305	.	.	
NITROGEN TOT KJELD (NG/L)							
			DET'N LIMIT = .020		GUIDELINE = N/A		
JAN	.210	.110	.130	.120	.	.	
FEB	.190	.110	.110	.130	.	.	
MAR	.190	.140	.150	.130	.	.	
APR	.140	.110	.080 <T	.100	.	.	
MAY	.180	.150	.120	.120	.140	.120	
JUN	.200	.140	.140	.120	.	.	
JUL	.190	.120	.110	.120	.	.	
AUG	.160	.130	.110	.130	.	.	
SEP	.160	.090 <T	.090 <T	.090 <T	.	.	
OCT	.150	.120	.110	.100	.	.	
NOV	.200	.100	.100	.100	.	.	
DEC	.180	.150	ISM	.130	.	.	
PH (DIMENSIONLESS)							
			DET'N LIMIT = N/A		GUIDELINE = 6.5-8.5(A4)		
JAN	7.860	7.710	7.780	7.880	.	.	
FEB	8.150	7.850	7.880	7.890	.	.	
MAR	8.330	8.260	8.250	8.250	.	.	
APR	8.160	7.880	7.890	7.970	.	.	
MAY	8.320	8.270	8.280	8.180	7.910	8.020	
JUN	8.070	7.960	7.950	7.960	.	.	
JUL	8.330	8.190	8.160	8.150	.	.	
AUG	8.280	8.180	8.120	8.150	.	.	
SEP	8.190	8.060	8.080	8.130	.	.	
OCT	8.340	8.220	8.120	8.150	.	.	
NOV	8.310	8.130	8.170	8.060	.	.	
DEC	8.240	8.260	ISM	8.130	.	.	
PHOSPHORUS FIL REACT (NG/L)							
			DET'N LIMIT = .0005		GUIDELINE = N/A		
JAN	.001 <T	.001 <T	.005	.	.	.	
FEB	BDL	BDL	.005	.	.	.	
MAR	.000 <T	BDL	.006	.	.	.	
APR	BDL	BDL	.003	.	.	.	
MAY	.000 <T	BDL	.005	.	.	.	
JUN	BDL	BDL	.003	.	.	.	
JUL	BDL	BDL	.002	.	.	.	
AUG	BDL	BDL	.003	.	.	.	
SEP	BDL	BDL	.003	.	.	.	

TABLE 5

DRINKING WATER SURVEILLANCE PROGRAM LONDON (LAKE HURON WSS) 1989

WATER TREATMENT PLANT

DISTRIBUTION SYSTEM

	RAW	TREATED	TREATED 2	SITE 1			SITE 2	
				FREE FLOW		STANDING	FREE FLOW	
OCT	BDL	BDL	.002	.	.	.	.	.
NOV	.002 <T	.000 <T	.001 <T	.	.	.	.	.
DEC	.001 <T	.000 <T	18M	.	.	.	.	.
PHOSPHORUS TOTAL (MG/L)			DET'N LIMIT = .002		GUIDELINE = .40 (F2)			
JAN	.011	.002 <T	.007 <T	.	.	.	.	.
FEB	.005 <T	BDL	.005 <T	.	.	.	.	.
MAR	.004 <T	.002 <T	.007 <T	.	.	.	.	.
APR	.003 <T	BDL	.005 <T	.	.	.	.	.
MAY	.005 <T	.009 <T	.005 <T	.	.	.	.	.
JUN	.012	.009 <T	.008 <T	.	.	.	.	.
JUL	.006 <T	.003 <T	.006 <T	.	.	.	.	.
AUG	.005 <T	.002 <T	.006 <T	.	.	.	.	.
SEP	.006 <T	.002 <T	.007 <T	.	.	.	.	.
OCT	.003 <T	BDL	.004 <T	.	.	.	.	.
NOV	.015	.003 <T	.002 <T	.	.	.	.	.
DEC	.010	.002 <T	18M	.	.	.	.	.
SULPHATE (MG/L)			DET'N LIMIT = .200		GUIDELINE = 500. (A3)			
JAN	15.450	20.790	20.830	20.830	.	.	.	.
FEB	17.120	25.550	22.500	22.330	.	.	.	.
MAR	16.360	20.740	22.150	21.300	.	.	.	.
APR	15.160	23.880	23.160	21.320	.	.	.	.
MAY	16.120	22.450	22.300	24.310	25.810	25.770	.	.
JUN	30.480	21.030	22.020	22.480	.	.	.	.
JUL	15.510	22.550	22.550	22.310	.	.	.	.
AUG	16.240	22.480	23.340	22.820	.	.	.	.
SEP	15.550	21.430	21.840	21.410	.	.	.	.
OCT	15.790	20.290	20.450	20.260	.	.	.	.
NOV	17.560	23.790	23.450	22.930	.	.	.	.
DEC	16.430	20.760	18M	22.330	.	.	.	.
TURBIDITY (FTU)			DET'N LIMIT = .02		GUIDELINE = 1.00 (A1)			
JAN	5.700	.330	.560	.430	.	.	.	.
FEB	1.750 RRV	.520	.410	.370	.	.	.	.
MAR	1.300	.190 <T	.540	.290	.	.	.	.
APR	1.130	.490	.780	.830	.	.	.	.
MAY	2.000	.520	.390	.890	.410	.360	.	.
JUN	1.310	.760	.630	.540	.	.	.	.
JUL	1.190	.640	.550	.730	.	.	.	.
AUG	.770	.200	.520	.390	.	.	.	.
SEP	1.360	.140	.240 <T	.250 <T	.	.	.	.
OCT	.350	.350	.250 <T	.600	.	.	.	.
NOV	9.600	.130 <T	.300	.120 <T	.	.	.	.
DEC	8.300	.160 <T	18M	.140 <T	.	.	.	.

TABLE 5

DRINKING WATER SURVEILLANCE PROGRAM LONDON (LAKE MICHIGAN WSS) 1989

WATER TREATMENT PLANT

DISTRIBUTION SYSTEM

		RAW	TREATED	TREATED 2	SITE 1	SITE 2		
					FREE FLOW	STANDING	FREE FLOW	
METALS								
SILVER (UG/L)					DET'N LIMIT = .020	GUIDELINE = 50. (A1)		
JAN	.030 <T	.130 <T	.060 <T	.110 <T	.	.	.	.
FEB	BDL	.120 <T	BDL	BDL	.	.	.	.
MAR	BDL	BDL	BDL	IRE	.	.	.	.
APR	BDL	.050 <T	.090 <T	.100 <T	.	.	.	.
MAY	BDL	BDL	BDL	BDL	.050 <T	BDL	.	.
JUN	BDL	BDL	BDL	.070 <T	.	.	.	.
JUL	BDL	BDL	BDL	BDL	.	.	.	.
AUG	BDL	.030 <T	.030 <T	.050 <T	.	.	.	.
SEP	BDL	BDL	BDL	BDL	.	.	.	.
OCT	BDL	BDL	BDL	BDL	.	.	.	.
NOV	BDL	BDL	BDL	BDL	.	.	.	.
DEC	BDL	BDL	IRE	BDL	.	.	.	.
ALUMINUM (UG/L)					DET'N LIMIT = .050	GUIDELINE = 100. (A4)		
JAN	30.160	39.440	33.640	33.640	.	.	.	.
FEB	15.080	34.800	32.480	51.040	.	.	.	.
MAR	24.360	53.360	37.120	IRE	.	.	.	.
APR	9.628	30.160	30.160	47.560	.	.	.	.
MAY	29.000	73.080	62.640	48.720	66.000	72.000	.	.
JUN	14.000	240.000	170.000	190.000	.	.	.	.
JUL	22.010	182.000	137.000	137.000	.	.	.	.
AUG	14.000	190.000	160.000	170.000	.	.	.	.
SEP	13.000	79.000	75.000	59.000	.	.	.	.
OCT	15.000	130.000	90.000	92.000	.	.	.	.
NOV	88.000	60.000	51.000	55.000	.	.	.	.
DEC	67.000	42.000	IRE	34.000	.	.	.	.
ARSENIC (UG/L)					DET'N LIMIT = 0.050	GUIDELINE = 50.0 (A1)		
JAN	.780 <T	.170 <T	.580 <T	.180 <T	.	.	.	.
FEB	1.400	1.000 <T	1.200	1.100	.	.	.	.
MAR	1.100	.840 <T	1.200	IRE	.	.	.	.
APR	1.100	.620 <T	.840 <T	.520 <T	.	.	.	.
MAY	1.300	.570 <T	1.100	.840 <T	.630 <T	.700 <T	.	.
JUN	1.200	.830 <T	1.100	.790 <T	.	.	.	.
JUL	.330 <T	BDL	.910 <T	.450 <T	.	.	.	.
AUG	1.700	.790 <T	1.300	1.100	.	.	.	.
SEP	.590 <T	.300 <T	.820 <T	.260 <T	.	.	.	.
OCT	.750 <T	.440 <T	.620 <T	.410 <T	.	.	.	.
NOV	.660 <T	.400 <T	.700 <T	.160 <T	.	.	.	.
DEC	.630 <T	.260 <T	IRE	.300 <T	.	.	.	.
BARIUM (UG/L)					DET'N LIMIT = 0.020	GUIDELINE = 1000. (A1)		
JAN	15.000	14.000	14.000	14.000	.	.	.	.
FEB	15.000	14.000	14.000	14.000	.	.	.	.
MAR	14.000	13.000	14.000	IRE	.	.	.	.

TABLE 5

DRINKING WATER SURVEILLANCE PROGRAM LONDON (LAKE HURON WSS) 1989

WATER TREATMENT PLANT

DISTRIBUTION SYSTEM

	RAW	TREATED	TREATED 2	SITE 1	SITE 2	
				FREE FLOW	STANDING	FREE FLOW
APR	14.000	14.000	14.000	14.000	.	.
MAY	14.000	14.000	14.000	14.000	16.000	15.000
JUN	15.000	15.000	15.000	16.000	.	.
JUL	15.720	15.690	15.350	15.440	.	.
AUG	16.000	15.000	15.000	15.000	.	.
SEP	14.000	14.000	15.000	14.000	.	.
OCT	14.000	14.000	14.000	13.000	.	.
NOV	15.000	14.000	14.000	13.000	.	.
DEC	17.000	15.000	ISM	15.000	.	.
BORON (UG/L)		DET'N LIMIT = 0.200		GUIDELINE = 5000. (A1)		
JAN	33.000	33.000	32.000	26.000	.	.
FEB	65.000	71.000	17.000 <T	69.000	.	.
MAR	83.000	71.000	66.000	IRE	.	.
APR	160.000	170.000	140.000	180.000	.	.
MAY	26.000	26.000	26.000	25.000	20.000 <T	12.000 <T
JUN	37.000	39.000	26.000	39.000	.	.
JUL	38.430	37.310	36.500	36.900	.	.
AUG	42.000	39.000	40.000	42.000	.	.
SEP	30.000	29.000	29.000	30.000	.	.
OCT	21.000	22.000	21.000	20.000 <T	.	.
NOV	24.000	23.000	22.000	22.000	.	.
DEC	15.000 <T	15.000 <T	ISM	15.000 <T	.	.
BERYLLIUM (UG/L)		DET'N LIMIT = 0.010		GUIDELINE = N/A		
JAN	BDL	BDL	.030 <T	.020 <T	.	.
FEB	.020 <T	.070 <T	BDL	.190 <T	.	.
MAR	.160 <T	.170 <T	.100 <T	IRE	.	.
APR	.160 <T	.070 <T	.120 <T	.230 <T	.	.
MAY	.050 <T	.060 <T	.120 <T	.060 <T	BDL	BDL
JUN	.210 <T	.070 <T	BDL	.020 <T	.	.
JUL	.140 <T	.090 <T	.050 <T	.120 <T	.	.
AUG	BDL	.090 <T	.050 <T	.090 <T	.	.
SEP	.070 <T	.060 <T	.090 <T	.080 <T	.	.
OCT	.020 <T	.030 <T	.040 <T	.040 <T	.	.
NOV	.020 <T	.040 <T	.020 <T	.020 <T	.	.
DEC	BDL	BDL	ISM	BDL	.	.
CADMIUM (UG/L)		DET'N LIMIT = 0.050		GUIDELINE = 5.000 (A1)		
JAN	BDL	BDL	BDL	BDL	.	.
FEB	.110 <T	.090 <T	.090 <T	BDL	.	.
MAR	.120 <T	.110 <T	.130 <T	IRE	.	.
APR	BDL	BDL	BDL	BDL	.	.
MAY	BDL	BDL	.060 <T	BDL	.120 <T	BDL
JUN	BDL	BDL	BDL	.070 <T	.	.
JUL	BDL	BDL	BDL	BDL	.	.
AUG	BDL	.070 <T	BDL	BDL	.	.

TABLE 5

DRINKING WATER SURVEILLANCE PROGRAM LONDON (LAKE MURCH MBS) 1989

WATER TREATMENT PLANT

DISTRIBUTION SYSTEM

	WATER TREATMENT PLANT			DISTRIBUTION SYSTEM		
	RAW	TREATED	TREATED 2	SITE 1	SITE 2	
				FREE FLOW	STANDING	FREE FLOW
SEP	BDL	BDL	BDL	BDL	.	.
OCT	BDL	BDL	BDL	BDL	.	.
NOV	BDL	BDL	BDL	BDL	.	.
DEC	BDL	BDL	ISM	BDL	.	.
COBALT (UG/L)						
	DET'N LIMIT = 0.020			GUIDELINE = N/A		
JAN	.120 <T	.090 <T	.110 <T	.130 <T	.	.
FEB	.240 <T	.300 <T	.190 <T	.250 <T	.	.
MAR	.140 <T	.170 <T	.140 <T	IRE	.	.
APR	.060 <T	.070 <T	.030 <T	.070 <T	.	.
MAY	.170 <T	.180 <T	.230 <T	.200 <T	.230 <T	.220 <T
JUN	.090 <T	.100 <T	.110 <T	.140 <T	.	.
JUL	.160 <T	.180 <T	.210 <T	.240 <T	.	.
AUG	.040 <T	.070 <T	.050 <T	.050 <T	.	.
SEP	.120 <T	.100 <T	.040 <T	.090 <T	.	.
OCT	.070 <T	.110 <T	.160 <T	.090 <T	.	.
NOV	.210 <T	.040 <T	.050 <T	.100 <T	.	.
DEC	.140 <T	.090 <T	ISM	.120 <T	.	.
CHROMIUM (UG/L)						
	DET'N LIMIT = 0.100			GUIDELINE = 50. (A1)		
JAN	4.800	4.600	4.200	3.000	.	.
FEB	5.900	6.200	.710 <T	5.900	.	.
MAR	7.700	6.300	6.000	IRE	.	.
APR	5.900	6.000	4.800	6.400	.	.
MAY	6.000	6.300	6.100	6.200	3.400	.590 <T
JUN	5.100	5.400	3.500	5.300	.	.
JUL	5.990	5.490	5.120	5.300	.	.
AUG	4.000	3.900	3.800	4.100	.	.
SEP	4.400	4.100	4.600	4.400	.	.
OCT	2.800	2.800	3.000	2.900	.	.
NOV	2.100	2.000	1.800	2.100	.	.
DEC	BDL	BDL	ISM	BDL	.	.
COPPER (UG/L)						
	DET'N LIMIT = .100			GUIDELINE = 1000 (A3)		
JAN	1.600	1.600	.840 <T	7.300	.	.
FEB	2.400	2.100	.940 <T	7.400	.	.
MAR	1.000 <T	1.400	.840 <T	IRE	.	.
APR	1.300	3.000	1.000 <T	2.700	.	.
MAY	2.300	2.200	.880 <T	2.600	590.000	86.000
JUN	1.300	1.800	1.400	5.700	.	.
JUL	2.490	2.710	1.190	4.220	.	.
AUG	1.600	2.900	.920 <T	2.300	.	.
SEP	7.700	2.700	.940 <T	2.400	.	.
OCT	2.300	2.300	.750 <T	1.900	.	.
NOV	1.900	1.400	1.000 <T	2.200	.	.
DEC	1.700 <T	1.300 <T	ISM	2.500 <T	.	.

DRINKING WATER SURVEILLANCE PROGRAM LONDON (LAKE MICHIGAN WSS) 1989

DISTRIBUTION SYSTEM

RAW		TREATED	TREATED 2	SITE 1	SITE 2		
				FREE FLOW	STANDING	FREE FLOW	
IRON (UG/L)		DET'M LIMIT = 4.000			GUIDELINE = 300. (A3)		
JAN	52.000	7.100 <T	14.000 <T	24.000 <T	.	.	.
FEB	18.000 <T	BDL	BDL	BDL	.	.	.
MAR	18.000 <T	6.000 <T	9.800 <T	IRE	.	.	.
APR	8.300 <T	BDL	BDL	BDL	13.000 <T	17.000 <T	.
MAY	8.200 <T	BDL	BDL	BDL	.	.	.
JUN	17.000 <T	9.400 <T	BDL	7.700 <T	.	.	.
JUL	16.180 <T	BDL	BDL	BDL	.	.	.
AUG	13.000 <T	BDL	BDL	BDL	.	.	.
SEP	BDL	BDL	BDL	BDL	.	.	.
OCT	19.000 <T	5.500 <T	BDL	BDL	.	.	.
NOV	140.000	BDL	BDL	BDL	.	.	.
DEC	120.000	BDL	IRE	BDL	.	.	.
MERCURY (UG/L)		DET'M LIMIT = 0.010			GUIDELINE = 1.000 (A1)		
JAN	.050 <T	.040 <T	BDL	BDL	.	.	.
FEB	.040 <T	.040 <T	BDL	.030 <T	.	.	.
MAR	BDL	BDL	BDL	BDL	.	.	.
APR	BDL	.020 <T	.020 <T	.020 <T	.	.030 <T	.
MAY	BDL	BDL	BDL	BDL	.	.	.
JUN	.020 <T	BDL	.020 <T	.020 <T	.	.	.
JUL	BDL	BDL	.030 <T	.020 <T	.	.	.
AUG	BDL	BDL	.020 <T	BDL	.	.	.
SEP	BDL	BDL	BDL	BDL	.	.	.
OCT	BDL	BDL	BDL	BDL	.	.	.
NOV	BDL	BDL	BDL	BDL	.	.	.
DEC	.020 <T	.020 <T	.030 <T	.020 <T	.	.	.
MANGANESE (UG/L)		DET'M LIMIT = .050			GUIDELINE = 50.0 (A3)		
JAN	3.800	.450 <T	.310 <T	.830	.	.	.
FEB	1.100	.480 <T	.350 <T	.700	.	.	.
MAR	1.100	.640	.280 <T	IRE	.	.	.
APR	1.000	1.000	.300 <T	.230 <T	1.100	1.800	.
MAY	.920	.390 <T	.240 <T	.340 <T	.	.	.
JUN	1.500	.950	.480 <T	.630	.	.	.
JUL	1.650	1.360	.480 <T	.480 <T	.	.	.
AUG	1.100	.930	.360 <T	.300 <T	.	.	.
SEP	1.400	.340 <T	.240 <T	.270 <T	.	.	.
OCT	.740	.760	.320 <T	.260 <T	.	.	.
NOV	8.300	.670	.350 <T	.250 <T	.	.	.
DEC	5.400	.700	IRE	.370 <T	.	.	.
MOLYBDENUM (UG/L)		DET'M LIMIT = 0.020			GUIDELINE = N/A		
JAN	.540	.420 <T	.470 <T	.470 <T	.	.	.
FEB	.810	.870	.770	.710	.	.	.
MAR	.850	.860	.760	IRE	.	.	.
APR	.640	.640	.670	.620	.	.	.

TABLE 5

DRINKING WATER SURVEILLANCE PROGRAM LONDON (LAKE HURON WSS) 1989

WATER TREATMENT PLANT

DISTRIBUTION SYSTEM

	RAW	TREATED	TREATED 2	SITE 1		SITE 2	
				FREE FLOW	STANDING	FREE FLOW	STANDING
MAY	.780	.800	.790	.720	.900	.850	
JUN	.740	.880	.750	.770	.	.	
JUL	.750	.780	.920	.830	.	.	
AUG	.710	.720	.610	.600	.	.	
SEP	.490 <T	.460 <T	.500 <T	.420 <T	.	.	
OCT	.480 <T	.520	.520	.420 <T	.	.	
NOV	.430 <T	.500 <T	.490 <T	.430 <T	.	.	
DEC	.470 <T	.560	IRM	.570	.	.	
NICKEL (UG/L)		DET'N LIMIT = 0.100		GUIDELINE = 50. (F3)			
JAN	1.100 <T	2.100	.620 <T	.820 <T	.	.	
FEB	1.300 <T	3.700	1.100 <T	1.400 <T	.	.	
MAR	.760 <T	1.000 <T	.980 <T	IRE	.	.	
APR	.590 <T	2.000 <T	.530 <T	.460 <T	.	.	
MAY	1.700 <T	2.800	1.800 <T	1.700 <T	.750 <T	1.300 <T	
JUN	.780 <T	.890 <T	.690 <T	.230 <T	.	.	
JUL	1.340 <T	3.060	2.110	1.740 <T	.	.	
AUG	1.100 <T	2.600	.780 <T	.670 <T	.	.	
SEP	.790 <T	2.600	.760 <T	.630 <T	.	.	
OCT	.690 <T	1.800 <T	.410 <T	.420 <T	.	.	
NOV	.720 <T	.780 <T	BDL	.480 <T	.	.	
DEC	.990 <T	.790 <T	IRM	.590 <T	.	.	
LEAD (UG/L)		DET'N LIMIT = 0.050		GUIDELINE = 50. (A1)			
JAN	.400	.100 <T	.030 <T	.520	.	.	
FEB	.450	.170 <T	BDL	.570	.	.	
MAR	.560	.280	.170 <T	IRE	.	.	
APR	.300	.140 <T	.070 <T	.370	.	.	
MAY	.360	.830	BDL	.640	22.000	2.000	
JUN	.230	.080 <T	.060 <T	.770	.	.	
JUL	.440	.120 <T	.090 <T	1.040	.	.	
AUG	.580	.220	.070 <T	.560	.	.	
SEP	.380	.130 <T	.080 <T	.330	.	.	
OCT	.290	.090 <T	.060 <T	.350	.	.	
NOV	.640	.040 <T	BDL	.250	.	.	
DEC	.360 <T	.060 <T	IRM	.200 <T	.	.	
ANTIMONY (UG/L)		DET'N LIMIT = .050		GUIDELINE = 146. (D4)			
JAN	.440	.440	.490	.480	.	.	
FEB	.880	.800	.730	.740	.	.	
MAR	.770	.800	.770	IRE	.	.	
APR	.650	.540	.590	.630	.	.	
MAY	.850	.650	.670	.750	.610	.550	
JUN	.910	.720	.770	.640	.	.	
JUL	.740	.690	.650	.790	.	.	
AUG	.660	.670	.670	.610	.	.	
SEP	.480	.520	.510	.500	.	.	

TABLE 5

DRINKING WATER SURVEILLANCE PROGRAM LONDON (LAKE HURON WSS) 1989

WATER TREATMENT PLANT

DISTRIBUTION SYSTEM

	RAW	TREATED	TREATED 2	SITE 1	SITE 2	
				FREE FLOW	STANDING	FREE FLOW
OCT	.510	.510	.700	.560	.	.
NOV	.250	.330	.370	.450	.	.
DEC	.330 <T	.280 <T	1BN	.320 <T	.	.
SELENIUM (UG/L)			DET'N LIMIT = 0.200		GUIDELINE = 10. (A1)	
JAN	.330 <T	BDL	.560 <T	1.100 <T	.	.
FEB	2.200 <T	1.800 <T	4.600 <T	3.800 <T	.	.
MAR	1.400 <T	.940 <T	3.000 <T	IRE	.	.
APR	3.200 <T	2.900 <T	1.600 <T	3.700 <T	.	.
MAY	1.500 <T	1.500 <T	2.400 <T	2.700 <T	2.900 <T	4.100 <T
JUN	1.200 <T	2.000 <T	2.200 <T	2.100 <T	.	.
JUL	BDL	BDL	BDL	BDL	.	.
AUG	BDL	1.700 <T	3.500 <T	2.000 <T	.	.
SEP	BDL	BDL	BDL	BDL	.	.
OCT	BDL	BDL	1.100 <T	BDL	.	.
NOV	BDL	1.300 <T	BDL	BDL	.	.
DEC	BDL	BDL	1BN	BDL	.	.
STRONTIUM (UG/L)			DET'N LIMIT = .050		GUIDELINE = N/A	
JAN	100.000	99.000	98.000	100.000	.	.
FEB	110.000	110.000	100.000	110.000	.	.
MAR	110.000	110.000	110.000	IRE	.	.
APR	100.000	100.000	100.000	100.000	.	.
MAY	120.000	120.000	120.000	120.000	140.000	140.000
JUN	120.000	130.000	120.000	120.000	.	.
JUL	132.220	132.000	128.000	133.000	.	.
AUG	120.000	120.000	120.000	120.000	.	.
SEP	110.000	110.000	120.000	110.000	.	.
OCT	110.000	110.000	110.000	110.000	.	.
NOV	100.000	98.000	98.000	98.000	.	.
DEC	98.000	96.000	1BN	99.000	.	.
TITANIUM (UG/L)			DET'N LIMIT = .050		GUIDELINE = N/A	
JAN	3.800	2.700	3.400	4.000	.	.
FEB	7.800	7.900	6.900	7.900	.	.
MAR	5.900	5.100	4.900	IRE	.	.
APR	5.700	5.600	4.800	5.800	.	.
MAY	3.500	2.800	2.700	2.700	4.200	4.000
JUN	4.600	4.700	5.000	5.200	.	.
JUL	5.620	5.180	5.190	5.290	.	.
AUG	6.400	5.700	5.800	6.300	.	.
SEP	4.700	4.600	4.400	4.400	.	.
OCT	4.400	4.000	4.100	4.100	.	.
NOV	4.900	3.800	2.800	3.900	.	.
DEC	4.500 <T	3.400 <T	1BN	3.300 <T	.	.
THALLIUM (UG/L)			DET'N LIMIT = .010		GUIDELINE = 13. (D4)	

TABLE 5

DRINKING WATER SURVEILLANCE PROGRAM LONDON (LAKE HURON WBS) 1989

WATER TREATMENT PLANT

DISTRIBUTION SYSTEM

	RAW	TREATED	TREATED 2	SITE 1	SITE 2	
				FREE FLOW	STANDING	FREE FLOW
JAN	BDL	BDL	BDL	BDL	.	.
FEB	BDL	.020 <T	BDL	BDL	.	.
MAR	BDL	BDL	BDL	IRE	.	.
APR	BDL	BDL	.030 <T	BDL	.	.
MAY	.050 <T	.070 <T	.020 <T	.070 <T	BDL	BDL
JUN	BDL	.040 <T	.020 <T	BDL	.	.
JUL	BDL	BDL	.070 <T	.070 <T	.	.
AUG	BDL	BDL	BDL	BDL	.	.
SEP	.020 <T	BDL	BDL	.050 <T	.	.
OCT	BDL	BDL	BDL	BDL	.	.
NOV	BDL	.020 <T	BDL	BDL	.	.
DEC	BDL	BDL	IRE	BDL	.	.
URANIUM (UG/L)		DET'N LIMIT = .020		GUIDELINE = 20. (A2)		
JAN	.180 <T	.120 <T	.100 <T	.090 <T	.	.
FEB	.390	.370	.240	.500	.	.
MAR	.700	.340	.260	IRE	.	.
APR	.340	.130 <T	.190 <T	.230	.	.
MAY	.380	.190 <T	.300	.230	.280	.260
JUN	.400	.380	.310	.450	.	.
JUL	.460	.270	.200 <T	.410	.	.
AUG	.340	.280	.220	.200 <T	.	.
SEP	.180 <T	.090 <T	.120 <T	.110 <T	.	.
OCT	.170 <T	.120 <T	.100 <T	.100 <T	.	.
NOV	.180 <T	.180 <T	.080 <T	.080 <T	.	.
DEC	.250 <T	.160 <T	IRE	.120 <T	.	.
VANADIUM (UG/L)		DET'N LIMIT = .050		GUIDELINE = N/A		
JAN	.240 <T	.350 <T	.390 <T	.390 <T	.	.
FEB	.290 <T	.680	.680	.640	.	.
MAR	.330 <T	.530	.620	IRE	.	.
APR	.220 <T	.560	.630	.570	.	.
MAY	.320 <T	.590	.700	.640	.520	.590
JUN	.330 <T	.570	.560	.570	.	.
JUL	.250 <T	.570	.780	.740	.	.
AUG	.310 <T	.640	.680	.700	.	.
SEP	.200 <T	.480 <T	.610	.490 <T	.	.
OCT	.280 <T	.460 <T	.500 <T	.570	.	.
NOV	.370 <T	.450 <T	.550	.540	.	.
DEC	.370 <T	.510	IRE	.620	.	.
ZINC (UG/L)		DET'N LIMIT = .001		GUIDELINE = 5000. (A3)		
JAN	5.100	6.800	1.700	6.000	.	.
FEB	3.600	7.700	2.000	2.900	.	.
MAR	2.600	6.100	2.100	IRE	.	.
APR	2.400	9.700	2.200	2.500	.	.
MAY	17.000	7.600	2.000	3.300	19.000	5.900

TABLE 5

DRINKING WATER SURVEILLANCE PROGRAM LONDON (LAKE HURON WSS) 1989

WATER TREATMENT PLANT

DISTRIBUTION SYSTEM

	RAW	TREATED	TREATED 2	SITE 1	SITE 2	
				FREE FLOW	STANDING	FREE FLOW
JUN	2.500	4.800	2.000	3.200	.	.
JUL	3.660	8.970	1.930	3.530	.	.
AUG	4.400	8.700	1.500	2.100	.	.
SEP	3.900	7.400	1.200	2.100	.	.
OCT	3.200	5.900	1.100	1.500	.	.
NOV	9.100	6.000	1.400	2.300	.	.
DEC	4.400	5.000	1.800	1.900 <T	.	.

TABLE 5

DRINKING WATER SURVEILLANCE PROGRAM LONDON (LAKE MURCH WBS) 1989

WATER TREATMENT PLANT

DISTRIBUTION SYSTEM

RAW		TREATED	TREATED 2	SITE 1	SITE 2	
				FREE FLOW	STANDING	FREE FLOW
PESTICIDES & PCB						
ALPHA BHC (NG/L)			DET'N LIMIT = 1.000		GUIDELINE = 700 (G)	
JAN	BDL	2.000 <T	BDL	2.000 <T	.	.
FEB	1.000 <T	1.000 <T	BDL	1.000 <T	.	.
MAR	2.000 <T	2.000 <T	2.000 <T	2.000 <T	.	.
APR	1.000 <T	2.000 <T	2.000 <T	BDL	.	.
MAY	1.000 <T	1.000 <T	1.000 <T	1.000 <T	.	1.000 <T
JUN	BDL	2.000 <T	4.000 <T	BDL	.	.
JUL	2.000 <T	BDL	3.000 <T	3.000 <T	.	.
AUG	2.000 <T	2.000 <T	2.000 <T	BDL	.	.
SEP	BDL	BDL	2.000 <T	BDL	.	.
OCT	1.000 <T	1.000 <T	1.000 <T	1.000 <T	.	.
NOV	1.000 <T	1.000 <T	2.000 <T	2.000 <T	.	.
DEC	BDL	BDL	1.000 <T	BDL	.	.
BETA BHC (NG/L)						
			DET'N LIMIT = 1.000		GUIDELINE = 300 (G)	
JAN	BDL	BDL	BDL	BDL	.	.
FEB	BDL	BDL	BDL	1.000 <T	.	.
MAR	BDL	BDL	BDL	BDL	.	.
APR	BDL	BDL	BDL	BDL	.	.
MAY	BDL	BDL	BDL	BDL	.	.
JUN	BDL	BDL	BDL	BDL	.	BDL
JUL	BDL	BDL	BDL	BDL	.	.
AUG	BDL	BDL	BDL	BDL	.	.
SEP	BDL	BDL	BDL	BDL	.	.
OCT	BDL	BDL	BDL	BDL	.	.
NOV	BDL	BDL	BDL	BDL	.	.
DEC	BDL	BDL	BDL	BDL	.	.

TABLE 5

DRINKING WATER SURVEILLANCE PROGRAM LONDON (LAKE HURON WSS) 1989

WATER TREATMENT PLANT

DISTRIBUTION SYSTEM

		WATER TREATMENT PLANT		DISTRIBUTION SYSTEM		
		RAW	TREATED	TREATED 2	SITE 1	SITE 2
					FREE FLOW	STANDING FREE FLOW
PHENOLICS (UG/L)				DET'M LIMIT = 0.2		GUIDELINE = 2.00 (A3)
JAN	1.200		1.000	1.200	.	.
FEB	1.600		.600	.800	.	.
MAR	1.000		1.000	.600 <T	.	.
APR	.600 <T		BDL	.600 <T	.	.
MAY	.800 <T		.800 <T	.800 <T	.	.
JUN	.600 <T		.800 <T	.600 <T	.	.
JUL	.800 <T		7.000	6.600	.	.
AUG	4.800		.800 <T	7.200	.	.
SEP	3.000		2.400	1.000	.	.
OCT	20.600		.800 <T	.600 <T	.	.
NOV	.600 <T		BDL	1.600	.	.
DEC	.400 <T		BDL	1HR	.	.

TABLE 5

DRINKING WATER SURVEILLANCE PROGRAM LONDON (LAKE MURON USS) 1989

WATER TREATMENT PLANT

DISTRIBUTION SYSTEM

	RAW	TREATED	TREATED 2	SITE 1	SITE 2	
				FREE FLOW	STANDING	FREE FLOW

VOLATILES						
TOLUENE (UG/L)			DET'M LIMIT = .050		GUIDELINE = 24.0 (B4)	
JAN	NDL	NDL	NDL	NDL	.	.
FEB	NDL	NDL	.100 <T	NDL	.	.
MAR	NDL	NDL	NDL	NDL	.	.
APR	NDL	NDL	NDL	NDL	.	.
MAY	NDL	.	NDL	NDL	.	NDL
JUN	NDL	.050 <T	.100 <T	NDL	.	.
JUL	NDL	.100 <T	NDL	NDL	.	.
AUG	NDL	.050 <T	NDL	NDL	.	.
SEP	.050 <T	NDL	NDL	NDL	.	.
OCT	NDL	.150 <T	NDL	NDL	.	.
NOV	NDL	NDL	NDL	NDL	.	.
DEC	NDL	NDL	NDL	NDL	.	.

ETHYLBENZENE (UG/L)						
			DET'M LIMIT = .050		GUIDELINE = 2.4 (B4)	
JAN	NDL	NDL	NDL	NDL	.	.
FEB	NDL	NDL	.050 <T	NDL	.	.
MAR	NDL	NDL	NDL	NDL	.	.
APR	.050 <T	NDL	.050 <T	.050 <T	.	.
MAY	NDL	.	NDL	NDL	.	.050 <T
JUN	NDL	NDL	NDL	NDL	.	.
JUL	NDL	.050 <T	NDL	NDL	.	.
AUG	NDL	NDL	NDL	NDL	.	.
SEP	NDL	NDL	NDL	NDL	.	.
OCT	NDL	NDL	NDL	NDL	.	.
NOV	NDL	NDL	NDL	NDL	.	.
DEC	NDL	NDL	NDL	NDL	.	.

M-XYLENE (UG/L)						
			DET'M LIMIT = .100		GUIDELINE = 300 (B4)	
JAN	NDL	NDL	NDL	NDL	.	.
FEB	NDL	NDL	.100 <T	NDL	.	.
MAR	NDL	NDL	NDL	NDL	.	.
APR	NDL	NDL	NDL	NDL	.	.
MAY	NDL	.	NDL	NDL	.	NDL
JUN	NDL	NDL	NDL	NDL	.	.
JUL	NDL	NDL	NDL	NDL	.	.
AUG	NDL	NDL	NDL	NDL	.	.
SEP	NDL	NDL	NDL	NDL	.	.
OCT	NDL	NDL	NDL	.100 <T	.	.
NOV	NDL	NDL	NDL	NDL	.	.
DEC	NDL	NDL	NDL	NDL	.	.

O-XYLENE (UG/L)						
			DET'M LIMIT = .050		GUIDELINE = 300 (B4)	
JAN	NDL	NDL	NDL	NDL	.	.
FEB	NDL	NDL	NDL	NDL	.	.
MAR	NDL	NDL	NDL	NDL	.	.

TABLE 5

DRINKING WATER SURVEILLANCE PROGRAM LONDON (LAKE HURON WSS) 1989

WATER TREATMENT PLANT

DISTRIBUTION SYSTEM

	RAW	TREATED	TREATED 2	SITE 1	SITE 2	
				FREE FLOW	STANDING	FREE FLOW
APR	BOL	BOL	BOL	BOL	.	.
MAY	BOL	.	BOL	BOL	.	BOL
JUN	BOL	.050 <T	BOL	BOL	.	.
JUL	BOL	.050 <T	BOL	BOL	.	.
AUG	BOL	BOL	BOL	BOL	.	.
SEP	BOL	BOL	BOL	BOL	.	.
OCT	BOL	BOL	BOL	BOL	.	.
NOV	BOL	BOL	BOL	BOL	.	.
DEC	BOL	BOL	BOL	BOL	.	.
STYRENE (UG/L)						
			DET'N LIMIT = .050	GUIDELINE = 46.5 (D2)		
JAN	BOL	BOL	BOL	BOL	.	.
FEB	BOL	BOL	.100 <T	BOL	.	.
MAR	BOL	BOL	BOL	BOL	.	.
APR	.500 UCS	BOL	.050 <T	BOL	.	.
MAY	.100 <T	.	BOL	BOL	.	.150 <T
JUN	.100 <T	BOL	BOL	BOL	.	.
JUL	BOL	BOL	BOL	BOL	.	.
AUG	.100 <T	BOL	.050 <T	.150 <T	.	.
SEP	.100 <T	BOL	BOL	BOL	.	.
OCT	.100 <T	BOL	BOL	BOL	.	.
NOV	.100 <T	BOL	BOL	BOL	.	.
DEC	.050 <T	BOL	BOL	BOL	.	.
CHLOROFORM (UG/L)						
			DET'N LIMIT = .100	GUIDELINE = 350 (A1+)		
JAN	BOL	22.000	16.500	17.400	.	.
FEB	BOL	15.100	10.600	18.800	.	.
MAR	BOL	12.000	16.400	17.800	.	.
APR	BOL	12.700	19.300	18.500	.	.
MAY	.100 <T	.	23.200	25.500	.	28.500
JUN	BOL	22.000	27.300	25.900	.	.
JUL	BOL	22.200	20.300	25.200	.	.
AUG	.300 <T	17.500	21.000	22.800	.	.
SEP	.400 <T	18.700	14.700	18.300	.	.
OCT	.100 <T	11.500	17.800	20.400	.	.
NOV	BOL	18.000	21.200	24.000	.	.
DEC	.200 <T	13.600 APS	14.300	17.900	.	.
111, TRICHLOROETHANE (UG/L)						
			DET'N LIMIT = .020	GUIDELINE = 200 (D1)		
JAN	BOL	BOL	BOL	BOL	.	.
FEB	BOL	BOL	BOL	BOL	.	.
MAR	.020 <T	BOL	BOL	BOL	.	.
APR	BOL	.020 <T	.020 <T	BOL	.	.
MAY	BOL	.	BOL	BOL	.	BOL
JUN	BOL	BOL	BOL	BOL	.	.
JUL	BOL	BOL	BOL	BOL	.	.
AUG	BOL	BOL	BOL	BOL	.	.

TABLE 5

DRINKING WATER SURVEILLANCE PROGRAM LONDON (LAKE HURON WSS) 1989

WATER TREATMENT PLANT

DISTRIBUTION SYSTEM

	RAW	TREATED	TREATED 2	SITE 1			SITE 2	
				FREE FLOW		STANDING	FREE FLOW	
SEP	BDL	BDL	BDL	BDL		.	.	.
OCT	BDL	BDL	BDL	BDL		.	.	.
NOV	BDL	BDL	BDL	BDL		.	.	.
DEC	BDL	BDL	BDL	BDL		.	.	.
DICHLOROBROMOMETHANE (UG/L)			DET'M LIMIT = .050		GUIDELINE = 350 (A1+)			
JAN	BDL	9.750	8.650	9.350	.	.	.	.
FEB	BDL	8.000	6.550	9.400	.	.	.	.
MAR	BDL	7.100	6.900	7.450	.	.	.	.
APR	BDL	6.650	6.750	7.900	.	.	.	.
MAY	.100 <T	.	9.100	9.150	.	.	10.400	.
JUN	BDL	9.950	9.700	9.050	.	.	.	.
JUL	BDL	9.600	8.750	10.050	.	.	.	.
AUG	.150 <T	9.150	10.100	10.800	.	.	.	.
SEP	.100 <T	8.900	7.700	8.500	.	.	.	.
OCT	.100 <T	7.200	7.550	9.400	.	.	.	.
NOV	BDL	7.500	8.450	9.050	.	.	.	.
DEC	.150 <T	7.400	7.700	8.550	.	.	.	.
CHLORODIBROMOMETHANE (UG/L)			DET'M LIMIT = .100		GUIDELINE = 350 (A1+)			
JAN	BDL	3.800	3.700	3.900	.	.	.	.
FEB	BDL	2.900	2.400	3.500	.	.	.	.
MAR	BDL	3.500	2.800	2.900	.	.	.	.
APR	BDL	3.600	3.200	3.300	.	.	.	.
MAY	BDL	.	3.300	3.200	.	.	3.100	.
JUN	BDL	3.900	3.300	2.900	.	.	.	.
JUL	BDL	3.900	3.700	4.100	.	.	.	.
AUG	BDL	4.800	4.400	4.800	.	.	.	.
SEP	BDL	3.900	3.300	3.400	.	.	.	.
OCT	BDL	5.200	4.400	4.300	.	.	.	.
NOV	BDL	3.400	3.500	3.600	.	.	.	.
DEC	BDL	3.800	3.600	3.900	.	.	.	.
T-CHLOROETHYLENE (UG/L)			DET'M LIMIT = .050		GUIDELINE = 10.0 (C2)			
JAN	BDL	BDL	BDL	BDL	.	.	.	.
FEB	BDL	BDL	BDL	BDL	.	.	.	.
MAR	BDL	BDL	BDL	BDL	.	.	.	.
APR	BDL	BDL	BDL	BDL	.	.	.	.
MAY	BDL	.	.050 <T	BDL	.	.	BDL	.
JUN	BDL	.050 <T	BDL	BDL	.	.	.	.
JUL	BDL	BDL	BDL	BDL	.	.	.	.
AUG	BDL	BDL	BDL	BDL	.	.	.	.
SEP	BDL	BDL	BDL	BDL	.	.	.	.
OCT	BDL	BDL	BDL	BDL	.	.	.	.
NOV	BDL	BDL	BDL	BDL	.	.	.	.
DEC	BDL	BDL	BDL	BDL	.	.	.	.

TABLE 5

DRINKING WATER SURVEILLANCE PROGRAM LONDON (LAKE HURON USS) 1989

WATER TREATMENT PLANT

DISTRIBUTION SYSTEM

		RAW	TREATED	TREATED 2	SITE 1	SITE 2	
					FREE FLOW	STANDING	FREE FLOW
BROMOFORM (UG/L)				DET'N LIMIT = .200		GUIDELINE = 350 (A1+)	
JAN	BDL	.400 <T	.400 <T	.400 <T	.	.	.
FEB	BDL	.200 <T	.200 <T	.200 <T	.	.	.
MAR	BDL	.400 <T	.200 <T	.200 <T	.	.	.
APR	BDL	.400 <T	.200 <T	.200 <T	.	.	.
MAY	BDL	.	.400 <T	.200 <T	.	.	.200 <T
JUN	BDL	.400 <T	.200 <T	BDL	.	.	.
JUL	BDL	.400 <T	.400 <T	.400 <T	.	.	.
AUG	BDL	.600 <T	.600 <T	.600 <T	.	.	.
SEP	BDL	.400 <T	.400 <T	.400 <T	.	.	.
OCT	BDL	.800 <T	.600 <T	.400 <T	.	.	.
NOV	BDL	.400 <T	.400 <T	.400 <T	.	.	.
DEC	BDL	.400 <T	.400 <T	.400 <T	.	.	.
TOTL TRIHALOMETHANES (UG/L)				DET'N LIMIT = .500		GUIDELINE = 350 (A1)	
JAN	BDL	35.950	29.250	31.050	.	.	.
FEB	BDL	26.200	19.750	31.900	.	.	.
MAR	BDL	23.000	26.300	28.350	.	.	.
APR	BDL	23.350	29.450	29.900	.	.	.
MAY	BDL	.	36.000	38.050	.	.	42.200
JUN	BDL	36.250	40.500	37.850	.	.	.
JUL	BDL	36.100	33.150	39.750	.	.	.
AUG	BDL	32.050	36.100	39.000	.	.	.
SEP	.500 <T	31.900	26.100	30.600	.	.	.
OCT	BDL	24.700	30.350	34.500	.	.	.
NOV	BDL	29.300	33.550	37.050	.	.	.
DEC	BDL	25.100	25.950	30.600	.	.	.

Table 6

SCAN/PARAMETER	UNIT	DETECTION	
		LIMIT	GUIDELINE
BACTERIOLOGICAL			
FECAL COLIFORM MEMBRANE FILTRATION	CT/100ML	0	0 (A1)
STANDARD PLATE COUNT MEMBRANE FILTRATION	CT/ML	0	500/ML (A1)
TOTAL COLIFORM MEMBRANE FILTRATION	CT/100ML	0	5/100mL (A1)
TOTAL COLIFORM BACKGROUND MF	CT/100ML	0	N/A
CHLOROAROMATICS			
HEXACHLOROBUTADIENE	NG/L	1.000	450. (D4)
1,2,3-TRICHLOROBENZENE	NG/L	5.000	10000 (I)
1,2,3,4-TETRACHLOROBENZENE	NG/L	1.000	10000 (I)
1,2,3,5-TETRACHLOROBENZENE	NG/L	1.000	10000 (I)
1,2,4-TRICHLOROBENZENE	NG/L	5.000	10000 (I)
1,2,4,5-TETRACHLOROBENZENE	NG/L	1.000	38000 (D4)
1,3,5-TRICHLOROBENZENE	NG/L	5.000	10000 (D4)
HEXACHLOROBENZENE	NG/L	1.0	10. (C1)
HEXACHLOROETHANE	NG/L	1.000	1900. (D4)
OCTACHLOROSTYRENE	NG/L	1.000	N/A
PENTACHLOROBENZENE	NG/L	1.000	74000 (D4)
2,3,6-TRICHLOROTOLUENE	NG/L	5.000	N/A
2,4,5-TRICHLOROTOLUENE	NG/L	5.000	N/A
2,6,A-TRICHLOROTOLUENE	NG/L	5.000	N/A
CHLOROPHENOLS			
2,3,4-TRICHLOROPHENOL	NG/L	50.	N/A
2,3,4,5-TETRACHLOROPHENOL	NG/L	50.	N/A
2,3,5,6-TETRACHLOROPHENOL	NG/L	50.	N/A
2,4,5-TRICHLOROPHENOL	NG/L	50.	2600000 (D4)
2,4,6-TRICHLOROPHENOL	NG/L	50.	2000. (B4)
PENTACHLOROPHENOL	NG/L	50.	30000. (B4)
CHEMISTRY (FLD)			
FIELD COMBINED CHLORINE RESIDUAL	MG/L	N/A	N/A
FIELD FREE CHLORINE RESIDUAL	MG/L	N/A	N/A
FIELD TOTAL CHLORINE RESIDUAL	MG/L	N/A	N/A
FIELD PH	DMSNLESS	N/A	6.5-8.5 (A4)
FIELD TEMPERATURE	°C	N/A	<15 °C (A1)
FIELD TURBIDITY	FTU	N/A	1.0 (A1)
CHEMISTRY (LAB)			
ALKALINITY	MG/L	.200	30-500 (A4)
CALCIUM	MG/L	.100	100. (F2)
CYANIDE	MG/L	.001	.20 (A1)
CHLORIDE	MG/L	.200	250. (A3)
COLOUR	TCU	.5	5.0 (A3)
CONDUCTIVITY	UMHO/CM	1.	400. (F2)
FLUORIDE	MG/L	.01	2.4 (A1)
HARDNESS	MG/L	.50	80-100 (A4)
MAGNESIUM	MG/L	.05	30. (F2)

SCAN/PARAMETER	UNIT	DETECTION	
		LIMIT	GUIDELINE
NITRITE	MG/L	.001	1.0 (A1)
TOTAL NITRATES	MG/L	.02	10. (A1)
NITROGEN TOTAL KJELDAHL	MG/L	.02	N/A
PH	DMS/LESS	N/A	6.5-8.5 (A4)
PHOSPHORUS FIL REACT	MG/L	.0005	N/A
PHOSPHORUS TOTAL	MG/L	.002	.40 (F2)
SULPHATE	MG/L	.200	500. (A3)
TOTAL SOLIDS	MG/L	1.	500. (A3)
TURBIDITY	FTU	.02	1.0 (A1)

METALS

ALUMINUM	UG/L	.050	100. (A4)
ANTIMONY	UG/L	.050	10. (F3)
ARSENIC	UG/L	.050	50. (A1)
BARIUM	UG/L	.020	1000. (A1)
BORON	UG/L	.200	5000. (A1)
BERYLLIUM	UG/L	.010	0.20 (H)
CADMIUM	UG/L	.050	5.0 (A1)
COBALT	UG/L	.020	1000. (H)
CHROMIUM	UG/L	.100	50. (A1)
COPPER	UG/L	.100	1000. (A3)
IRON	UG/L	5.0	300. (A3)
MERCURY	UG/L	.01	1.0 (A1)
MANGANESE	UG/L	.050	50. (A3)
MOLYBDENUM	UG/L	.020	500. (H)
NICKEL	UG/L	.100	50. (F3)
LEAD	UG/L	.020	50. (A1)
SELENIUM	UG/L	.200	10. (A1)
SILVER	UG/L	.020	50. (A1)
STRONTIUM	UG/L	.100	2000. (H)
THALLIUM	UG/L	.010	13. (D4)
TITANIUM	UG/L	.100	N/A
URANIUM	UG/L	.020	20. (A2)
VANADIUM	UG/L	.020	100. (H)
ZINC	UG/L	.020	5000. (A3)

PHENOLICS

PHENOLICS (UNFILTERED REACTIVE)	UG/L	.2	2.0 (A3)
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PESTICIDES & PCB

ALDRIN	NG/L	1.0	700. (A1)
AMETRINE	NG/L	50.	300000. (D3)
ATRAZINE	NG/L	50.	60000. (B3)
ALPHA HEXACHLOROCYCLOHEXANE (BHC)	NG/L	1.0	700. (G)
BETA HEXACHLOROCYCLOHEXANE (BHC)	NG/L	1.0	300. (G)
GAMMA HEXACHLOROCYCLOHEXANE (LINDANE)	NG/L	1.0	4000. (A1)
ALPHA CHLORDANE	NG/L	2.0	7000. (A1)
GAMMA CHLORDANE	NG/L	2.0	7000. (A1)
BLADEX	NG/L	100.	10000. (B3)
DIELDRIN	NG/L	2.0	700. (A1)
METHOXYCHLOR	NG/L	5.0	900000. (B1)
ENDOSULFAN 1 (THIODAN I)	NG/L	2.0	74000. (D4)
ENDOSULFAN 2 (THIODAN II)	NG/L	4.0	74000. (D4)
ENDRIN	NG/L	4.0	200. (A1)
ENDOSULFAN SULPHATE (THIODAN SULPHATE)	NG/L	4.0	N/A

SCAN/PARAMETER	DETECTION		
	UNIT	LIMIT	GUIDELINE
HEPTACHLOR EPOXIDE	NG/L	1.0	3000. (A1)
HEPTACHLOR	NG/L	1.0	3000. (A1)
METOLACHLOR	NG/L	500.	50000. (B3)
MIREX	NG/L	5.0	N/A
OXYCHLORDANE	NG/L	2.0	N/A
O,P-DDT	NG/L	5.0	30000. (A1)
PCB	NG/L	20.0	3000. (A2)
O,P-DDD	NG/L	5.0	N/A
PPDDE	NG/L	1.0	30000. (A1)
PPDDT	NG/L	5.0	30000. (A1)
ATRATONE	NG/L	50.	N/A
ALACHLOR	NG/L	500.	35000. (D2)
PROMETONE	NG/L	50.	52500. (D3)
PROPazine	NG/L	50.	16000. (D2)
PROMETRYNE	NG/L	50.	1000. (B3)
SENCOR (METRIBUZIN)	NG/L	100.	80000. (B2)
SIMAZINE	NG/L	50.	10000. (B3)

POLYAROMATIC HYDROCARBONS

PHENANTHRENE	NG/L	10.0	N/A
ANTHRACENE	NG/L	1.0	N/A
FLUORANTHENE	NG/L	20.0	42000. (D4)
PYRENE	NG/L	20.0	N/A
BENZO(A)ANTHRACENE	NG/L	20.0	N/A
CHRYSENE	NG/L	50.0	N/A
DIMETHYL BENZO(A)ANTHRACENE	NG/L	5.0	N/A
BENZO(E)PYRENE	NG/L	50.0	N/A
BENZO(B)FLUORANTHENE	NG/L	10.0	N/A
PERYLENE	NG/L	10.0	N/A
BENZO(K)FLUORANTHENE	NG/L	1.0	N/A
BENZO(A)PYRENE	NG/L	5.0	10. (B1)
BENZO(G,H,I)PERYLENE	NG/L	20.0	N/A
DIBENZO(A,H)ANTHRACENE	NG/L	10.0	N/A
INDENO(1,2,3-C,D)PYRENE	NG/L	20.0	N/A
BENZO(B)CHRYSENE	NG/L	2.0	N/A
CORONENE	NG/L	10.0	N/A

SPECIFIC PESTICIDES

TOXAPHENE	NG/L	N/A	5000. (A1)
2,4,5-TRICHLOROBUTYRIC ACID (2,4,5-T)	NG/L	50.	200000. (B4)
2,4-DICHLOROBUTYRIC ACID (2,4-D)	NG/L	100.	100000. (A1)
2,4-DICHLOROPHENOXYBUTYRIC ACID	NG/L	200.	18000. (B3)
2,4-D PROPIONIC ACID	NG/L	100.	N/A
DICAMBA	NG/L	100.	120000. (B1)
PICLORAM	NG/L	100.	190000. (B3)
SILVEX (2,4,5-TP)	NG/L	50.	10000. (A1)
DIAZINON	NG/L	20.	20000. (B1)
DICHLOROVOS	NG/L	20.	N/A
DURSBAN	NG/L	20.	N/A
ETHION	NG/L	20.	35000. (G)
GUTHION(AZINPHOSMETHYL)	NG/L	N/A	20000. (B1)
MALATHION	NG/L	20.	190000. (B1)
MEVINPHOS	NG/L	20.	N/A
METHYL PARATHION	NG/L	50.	7000. (A1)
METHYLTRITHION	NG/L	20.	N/A

SCAN/PARAMETER	DETECTION		
	UNIT	LIMIT	GUIDELINE
PARATHION	NG/L	20.	50000. (B1)
PHORATE (THIMET)	NG/L	20.	2000. (B3)
RELDAN	NG/L	20.	N/A
RONNEL	NG/L	20.	N/A
AMINOCARB	NG/L	N/A	N/A
BENONYL	NG/L	N/A	N/A
BUX (METALKAMATE)	NG/L	2000.	N/A
CARBOFURAN	NG/L	2000.	90000. (B1)
CICP (CHLORPROPHAM)	NG/L	2000.	350000. (G)
DIALLATE	NG/L	2000.	30000. (H)
EPTAM	NG/L	2000.	N/A
IPC	NG/L	2000.	N/A
PROPOXUR (BAYGON)	NG/L	2000.	90000. (G)
SEVIN (CARBARYL)	NG/L	200.	90000. (B1)
SUTAN (BUTYLATE)	NG/L	2000.	245000. (D3)

VOLATILES

BENZENE	UG/L	.050	5.0 (B1)
TOLUENE	UG/L	.050	24.0 (B4)
ETHYLBENZENE	UG/L	.050	2.4 (B4)
PARA-XYLENE	UG/L	.100	300. (B4)
META-XYLENE	UG/L	.100	300. (B4)
ORTHO-XYLENE	UG/L	.050	300. (B4)
1,1-DICHLOROETHYLENE	UG/L	.100	7.0 (D1)
ETHYLENE DIBROMIDE	UG/L	.05	.05 (G)
METHYLENE CHLORIDE	UG/L	.500	50. (B1)
TRANS-1,2-DICHLOROETHYLENE	UG/L	.100	70. (D5)
1,1-DICHLOROETHANE	UG/L	.100	N/A
CHLOROFORM	UG/L	.100	350. (A1+)
1,1,1-TRICHLOROETHANE	UG/L	.020	200. (D1)
1,2-DICHLOROETHANE	UG/L	.050	5.0 (D1)
CARBON TETRACHLORIDE	UG/L	.200	5.0 (B1)
1,2-DICHLOROPROPANE	UG/L	.050	6.0 (D5)
TRICHLOROETHYLENE	UG/L	.100	50. (B1)
DICHLOROBROMOMETHANE	UG/L	.050	350. (A1+)
1,1,2-TRICHLOROETHANE	UG/L	.050	.60 (D4)
CHLORODIBROMOMETHANE	UG/L	.100	350. (A1+)
TETRACHLOROETHYLENE	UG/L	.050	10.0 (C2)
BROMOFORM	UG/L	.200	350. (A1+)
1,1,2,2-TETRACHLOROETHANE	UG/L	.050	0.17 (D4)
CHLOROBENZENE	UG/L	.100	60. (D5)
1,4-DICHLOROBENZENE	UG/L	.100	1.0 (B4)
1,3-DICHLOROBENZENE	UG/L	.100	130. (G)
1,2-DICHLOROBENZENE	UG/L	.050	3.0 (B4)
TRIFLUOROCHLOROTOLUENE	UG/L	.100	N/A
TOTAL TRIHALOMETHANES	UG/L	.500	350. (A1)
STYRENE	UG/L	.05	140. (D5)